Dental Digest

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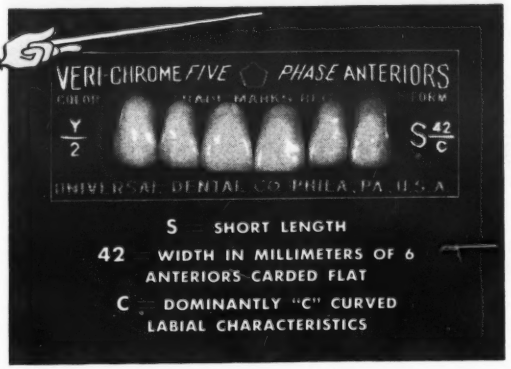

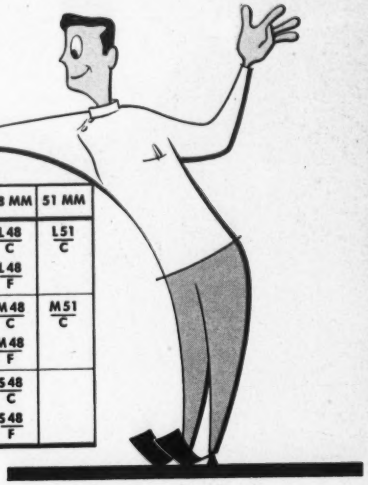

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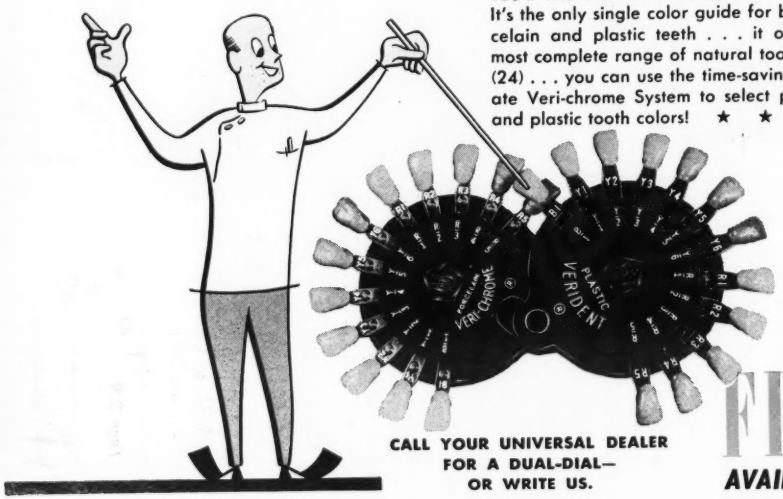

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About Our CONTRIBUTORS

HAROLD C. KILPATRICK, D.D.S. (University of Pennsylvania, 1932) is a general practitioner. Doctor Kilpatrick has been for some time interested in the development of high speed techniques. His article this month, TRAUMA REDUCTION IN CAVITY PREPARATIONS UTILIZING ROTATION-SPEEDS IN EXCESS OF 60,000 RPM, continues the investigation he described in his article of June, 1955.

MAX I. TENDRICH, D.D.S. (Chicago College of Dental Surgery, Loyola University, 1945) emphasis full mouth rehabilitation in his practice. Doctor Tendrich will be remembered for his article on this subject in the June 1955 issue. This month he presents RECONSTRUCTION PROCEDURE FOR A CORRECTED CLEFT PALATE PATIENT.

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TRAUMA REDUCTION *in Cavity Preparations Utilizing Rotational Speeds in Excess of 60,000 R.P.M.*

HAROLD C. KILPATRICK, D.D.S., Yonkers, N. Y.

DIGEST

The author of this article has had notable success with high speed techniques in his practice. In this article he discusses a new belt-driven handpiece, the Page-Chayes handpiece, which was invented by a dentist and which the author who has had it in constant use since July, 1955, has found to cut with virtually no vibration at extremely high speeds. The instrument, described as a significant advance in dental technical aids, achieves reduction in tension for the patient and the operator, and it is predicted that its use will make possible routine quadrant restorations prepared and inserted at one appointment.

Advantages of High Speed Techniques

The following are some of the advantages in the use of higher rotational speeds:

1. Better preparations can be completed more rapidly with less tension for patient and operator.

2. Economic advantages are present because of increased income from a greater amount of work accomplished without increasing fees.[1]

3. Among the most desirable features of higher speeds is the reduction of vibration. Ingraham and Tanner[2] and McEwen[3] among other investigators emphasize vibration reduction as a definite factor in minimizing mutual operator-patient fatigue and tension. The speeds referred to were around 15,000 to 40,000 r.p.m. and still produced some vibrational frequencies which were objectionable.

New Handpiece Introduced

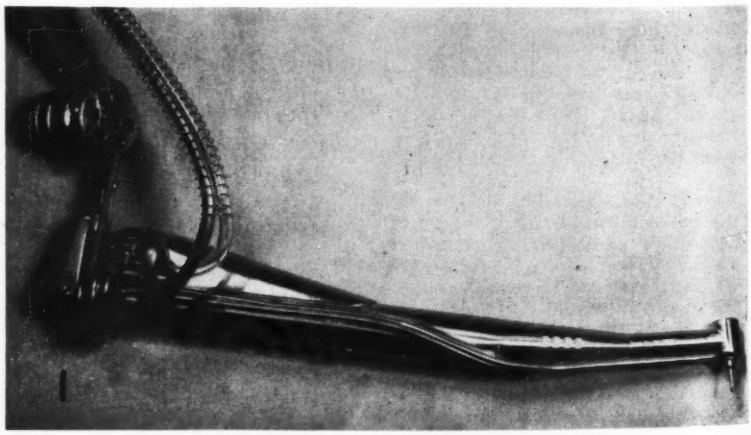
Since July, 1955 the author has used a new handpiece which so reduces the traumatic vibration output to the tooth that many patients are entirely unaware of the cutting tool when it is applied to the enamel or dentine. In Figure 2 is shown a dual engine set-up for comparative testing. After making several thousand cavity preparations in the mouth, the writer found it difficult to return to conventional equipment. Patient acceptance of the Page-Chayes handpiece was notably favorable.

Result of Prolonged Research—This new handpiece which was developed by Richard Page, D.D.S., of Chappaqua, New York, is the result of more than ten years' research. The instrument can develop a speed of over 200,000 r.p.m. if desired.

Description of Handpiece—On inspection, the Page-Chayes handpiece impresses the viewer with its simplicity (Fig. 1). It resembles a conventional contra-angle in design and angulation.

Component Parts—The body of the handpiece is made of stainless steel to which two plastic tubes join two steel tubes which wrap around the outer shell and help cool the inner section. One tube carries air along from a simple attachment to the air line leading to a Thermex or similar handpiece spray attachment.

Air Supplied—The arrangement is unique in that the attachment jets air out from around the bur tube head to prevent saliva and other debris from entering the inner part of the handpiece spray and carries either air or air and water mixed for tooth and cutting-tool cooling.



1. ***The handpiece is remarkable for its simplicity.***

[1]Ryan, Edward J.: Editorial Comment, Oral Hygiene **45**:1254 (Oct.) 1955.
[2]Ingraham, R. and Tanner, H. M.: The Adaptation of Modern Instruments and Increased Operating Speeds to Restorative Procedures, JADA **47**:311 (Sept.) 1953.
[3]McEwen, R. A.: Accelerated Handpiece Speeds in Restorative Dentistry, New York D. J. **20**:250 (July) 1954.

Belt Attached From Standard Engine—At one end of the handpiece is a large drive pulley with a smaller pulley for the regular belt to attach from the standard dental engine. The body houses a chassis which serves as a framework to support its belt drive.

High Speed Factor—The belt is made of nylon and rubber and runs from a large drive pulley over two sets of stainless steel ball-bearing idler pulleys to the drive spindle utilizing a ratio of five to one. It is this factor which gives the handpiece its extremely high speed.

Functional Features of Handpiece

Method of Speed Production —When the engine speed is stepped up by large pulleys and other means as described in a previous article[8], the ultra high speeds can be attained easily. Without any engine speed step-up a base engine speed of 6,000 r.p.m. will produce 60,000 r.p.m. at the cutting tool. In Figure 2 the dual set-up arrangement, a small Foredom laboratory engine with an engine speed of 20,000 r.p.m., will permit the Page-Chayes to produce speeds of over 100,000 r.p.m.

Vibration Decreased—Speed is not the only factor in improvement. The almost vibrationless performance is of the greatest importance. When a bur was used at this speed in a metal bushing the vibration was extreme. This led to the development of a rubber bushing set in a metal meshwork. When used at speeds of 60,000 r.p.m. or more, traumatic tooth vibration was almost imperceptible, but below this speed it was evident.

Conventional Tools Reduced to Fit —The rubber bushing necessitated having the shanks of the conventional diamond and carbide cutting tools reduced by their respective manufacturers to 1/16 of an inch in order to fit the special rubber bushing.

Mechanical Factors of New Handpiece

Reports on the cutting characteristics of carbide burs tend to favor speeds of around 10,000 r.p.m.[4] The cutting ability of the Page-Chayes handpiece is so extraordinary that a new evaluation of tooth removal must be determined.

2. ***Dual engine arrangement for comparative testing. The Page-Chayes handpiece is powered by the Foredom laboratory engine.***

Life of Burs Extended—The life of carbide burs used in this handpiece is surprisingly long and even burs which show considerable wear under the microscope still retain their rapid cutting ability. Old amalgam restorations can be removed in seconds. Gold inlays also seem to be cut easier than with conventional equipment.

Small Cutting Tools Used—Cutting tools of large diameter tend to vibrate, but because the smaller sizes cut so rapidly, it is unnecessary to use the larger ones. Inverted cones, 34, 35, 37, fissure burs 701, 558, round 1, 2, 4 seem to do 95 per cent of operative work, according to McEwen.[5]

Use of Diamond Stones—Diamond stones can be used effectively in this instrument. Small inverted cones and hollow cores are exceptionally useful. Stones of highest quality should be secured as the lower grade stones tend to chip off at these higher speeds.

Changing Time for Cutting Tools—This is about the same as a latch type contra-angle. A plastic changing tool facilitates removal with the aid of a soap lubricant. Excess lubricant will cause slippage and slow expulsion of the cutting instrument.

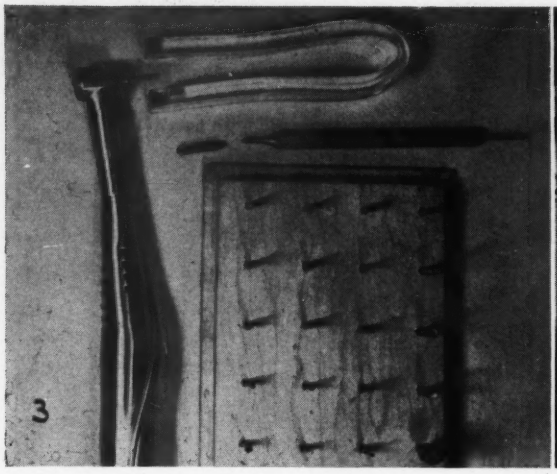
Care of Handpiece

The handpiece needs far less care than others in current use. All that is necessary for disinfection is to cold sterilize the instrument by wiping it with Bactine® or similar germicide after each use. The bur bushing is changed with a special bushing-removal and inserting tool after several hours' use. This change can be effected in thirty seconds. Depending on the amount of use, the handpiece will have to be returned to the manufacturer for greasing and belt change. The author has used one handpiece for over 200 preparations a week for more than five months without greasing or belt change.

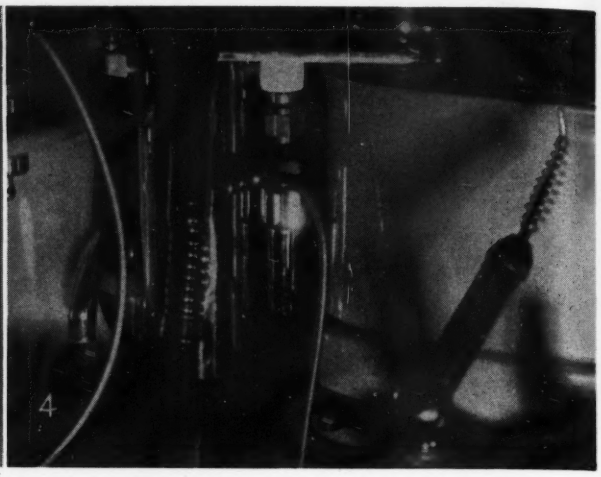
General Considerations

Objections to high speed techniques have been raised by Seldin[6] and Landa[7] due to the fact that the heat

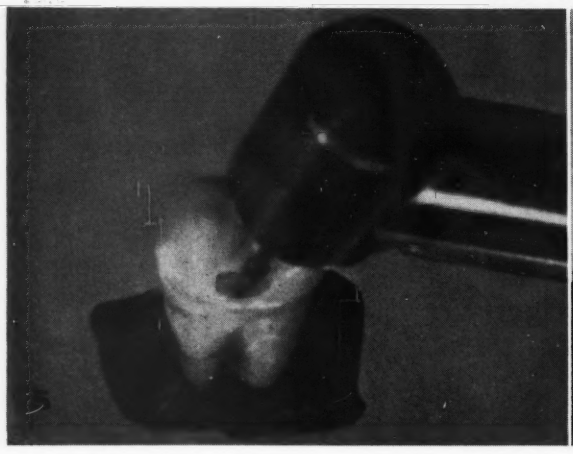
[4]Hudson, D. C.: Factors Influencing the Cutting Characteristics of Rotating Dental Instruments, JADA **50**:382 (April) 1955.
[5]McEwen, R. A.: Accelerated Handpiece Speeds in Restorative Dentistry, New York D. J. **21**:475 (Dec.) 1955.
[6]Seldin, Jules: Editorial, Speed in Dentistry, New York J. D. **25**:3 (Jan.) 1955.
[7]Landa, J. S.: An Analysis of Current Practices in Mouth Rehabilitation. J. Prosthet. D. **5**:535 (July) 1955.



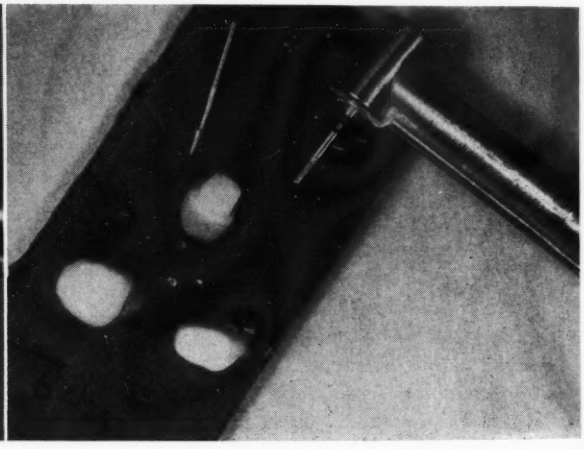
3. *Plastic bur-removable instrument. Bushing, bushing-removal, and inserting tool. Group of carbide and diamond cutting tools with which 90 per cent of operative preparations can be accomplished.*



4. *Special fitting to furnish air for keeping saliva and debris from entering handpiece.*



5. *An interproximal cut made with a No. 558 bur at 130,000 r.p.m. without penetrating the enamel wall which is 0.2 millimeter thick.*



6. *Crown preparations with or without shoulders can be readily prepared.*

evolved caused pulpal irritation and death of this organ. The rise of accidents was also cited. With the Page-Chayes handpiece, there is less heat due to the lighter touch and the shorter period of time that the cutting tool is in contact with the tooth. The tooth and bur should be cooled with the air-water spray mentioned before.

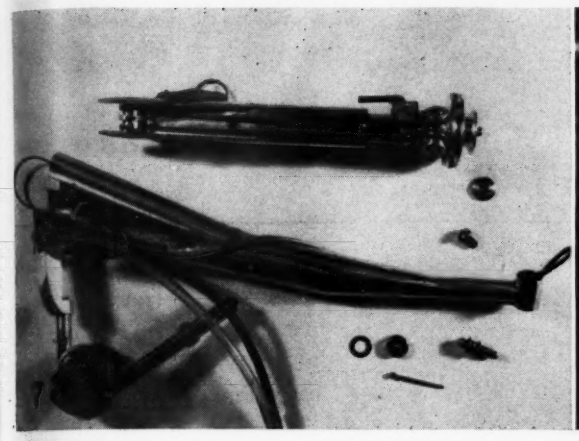
Safety Factor—It can be definitely stated that this is one of the most controlled cutting tools that can be used in the mouth. The pressure of two ounces reduces the slippage factor so that when cutting through a point which needs immediate braking, such as a marginal ridge, there is no problem in preventing this tool from injuring adjacent structures. In Figure 5 is shown an interproximal cut made with a No. 558 bur at 130,000 r.p.m. without penetrating the enamel wall which is 0.2 millimeter thin.

Control Factor—Ease in control is evident in carries removal, even over an area of possible exposure. A round bur can be used with greater safety because a true cutting action is used instead of a push motion necessary for use with conventional equipment.

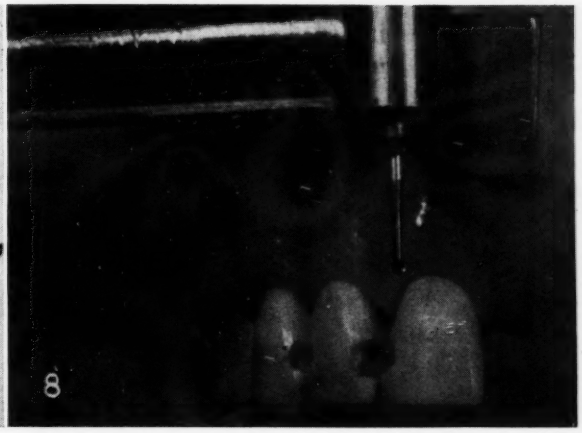
[8]Kilpatrick, H. C.: High Speed in Amalgam Cavity Preparations, DENTAL DIGEST **61**:258 (June) 1955.

Pain Decreased—Although pain is still experienced with this instrument it is not as intense as with other equipment. Many patients who normally had anesthesia easily withstood the short cutting period without anesthesia. When changing back to conventional equipment, patient resentment was often encountered.

Appliance Adapted to Standard Equipment — There are available many instruments which can be considered strictly auxiliary equipment. There is no doubt that the airbrasive, the ultrasonic, and the water turbine can be of aid to the average practi-



7. *Internal chassis which supports belt. Spindle bearing. Air lock which prevents use unless the internal air circuit is functioning.*



8. *Multiple Class III cavities prepared in seconds without nicking the adjoining teeth.*

tioner. They present both a space and investment problem, as well as limitations in use. Using the Page-Chayes, no equipment or space problem exists inasmuch as the handpiece is well adapted to the standard equipment.

Use as Straight Handpiece — A change is readily effected in the appliance by slipping off the engine belt from the Page-Chayes, removing the handpiece and attaching a straight handpiece or other conventional contra-angle and handpiece. This is necessary because the Page-Chayes cannot be used for prophylaxis, some polishing operations, amalgam vibrators, or with discs and stones of large diameter.

Conclusion

A new belt-driven, gearless contra-angle handpiece is described which cuts with virtually no vibration and extremely high speeds. It opens the field for routine quadrant dental restorations prepared and inserted at one setting. Reduction in nervous tension to both operator and patient are possible in addition to valuable economic advantages. This instrument is a significant advance in dental technical aids.

27-41 *Ludlow Street*

Radiotherapy in the Management of the Cancer Patient

GILBERT H. FLETCHER, M.D., Houston, Texas

Cancer of the Oral Cavity

Squamous cell carcinoma of the oral cavity is a serious disease which, if not treated radically when first diagnosed, will be fatal. The patient has one chance for cure, that is, the first. Consequently there is no minor procedure of use in the treatment of cancers of the oral cavity. If surgery is chosen, it is always of a radical nature; and the volume of tissue which would have to be excised can often be brought to the necessary cancerocidal level of ionizing energy by skillful irradiation, for instance, interstitial gamma ray therapy.

Successful Treatment by Irradiation

Early tumors of the tongue, floor of the mouth, and buccal mucosa can be treated by irradiation, which will result in a high cure rate and excellent preservation of function. The follow-up is of extreme importance as a recurrence can still be handled by operation (never by irradiation). The teamwork of the radiotherapist and surgeon is essential to offer the best chance for cure with a minimum of disfigurement and crippling. In the more advanced tumors, both radiation and surgery are at times used to attack the primary disease.

Surgery Often a Palliative Measure

Tumors situated in the floor of the mouth or soft tissue, and which invade the bone, are as a rule best treated with the so-called commando type of operation. It must also be remembered that surgery is often a better palliative agent in eradicating a painful, unsightly, heavily infected tumor. In cases of tumors of this type, it has been found that radiation often adds only necrosis to the existing tumor.

From *Postgraduate Medicine* **17**:493 (June) 1955.

Reconstruction Procedure for a Corrected CLEFT PALATE *Patient: Case Report*

MAX I. TENDRICH, D.D.S., Miami

DIGEST

The dental patient who has experienced extensive and costly treatment which has failed because of neglect, poor diagnosis and operative procedure, or a physical deformity, often values the dentist's advice concerning future treatment. This article describes a case where a patient with a corrected cleft palate defect was persuaded to conserve her remaining teeth. A step-by-step description is given of the treatment completed in this case.

Dental Problems Encountered

The patient referred to in this case had many of the commonly encountered dental problems. She was caries prone and when first seen had rampant caries. The remaining mandibular teeth were the cuspids and lateral incisors, and the left first bicuspid. There were also seven irregularly spaced maxillary teeth. The upper lateral incisors were extensively infected and had to be removed.

Corrected Cleft Palate a Complication—The patient was wearing upper and lower cast gold removable bridges which were uncomfortable and had caused considerable tissue inflammation. An additional complication in this case was the presence of a corrected cleft palate defect which had been repaired several times. The oral orifice was small and severe overbite existed (Figs. 1 and 2). The teeth were extremely sensitive due to extensive caries.

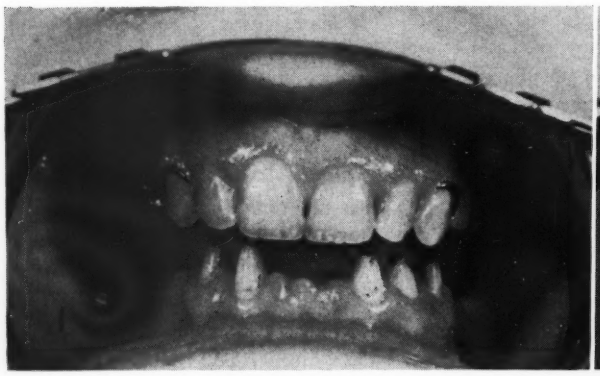
Failure of Previous Restorations—The patient was discouraged with the condition of her teeth as she had undergone extensive restoration procedures several times before. These had failed because after each surgical repair of the palate it had been necessary to repeat the restorative measures. As the patient was in modest financial circumstances a hardship was imposed.

Conservation of Teeth Recommended — The patient's decision was to have all the remaining teeth removed and full dentures constructed. Because of the patient's youth, however, small dental arches, and physical deformity it was important to do everything possible to conserve the remaining teeth. Although the cleft palate was repaired, a speech impediment existed and no assurance could be given that full dentures would correct this condition. The patient was persuaded of the value of this approach.

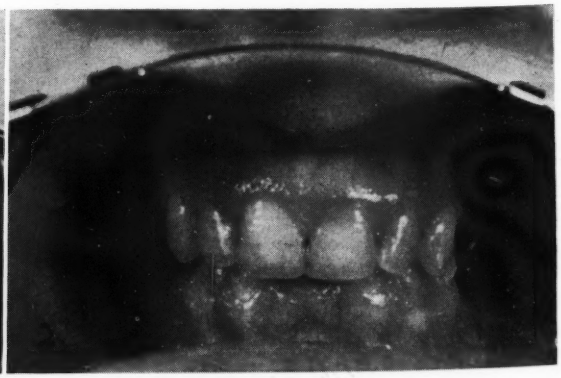
Treatment

Lower Arch — With the patient's approval and cooperation the following steps were taken:

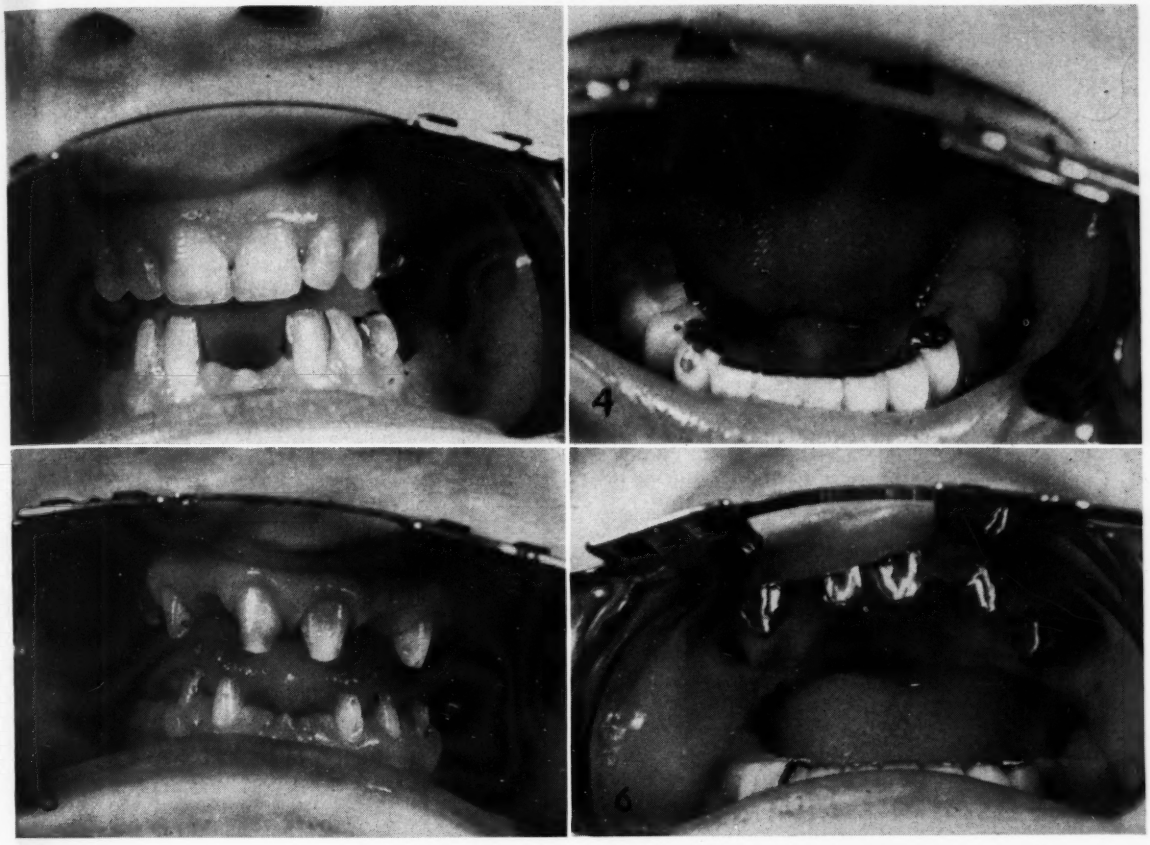
1. All of the remaining teeth were prepared for cast veneer crowns (Fig. 3).
2. Copper band and compound impressions were taken and gold copings constructed.
3. Final plaster impressions and gold coping impressions were taken of the lower arch.
4. The hinge axis was located and transferred to an adjustable articulator.
5. Centric and eccentric movements



1. ***The case before treatment.***



2. ***The case before treatment. Note extreme overbite.***



3. ***The lower teeth prepared for cast gold veneer crowns.***
4. ***Lower veneer crown, fixed bridge, and precision attachment case in the mouth.***
5. ***Upper teeth prepared for cast veneer crowns.***
6. ***Cast gold veneer copings in position.***

were recorded with a three-dimensional gothic arch tracer.

6. An anterior veneer crown fixed bridge was constructed from the right cuspid to the left first bicuspid. The posterior teeth were replaced by means of a precision attachment removable bridge (Fig. 4).

Upper Arch—The patient wore the lower case with temporary cement for several months. She then requested that the upper arch be treated in a similar manner. The following steps were taken in treating the upper arch:

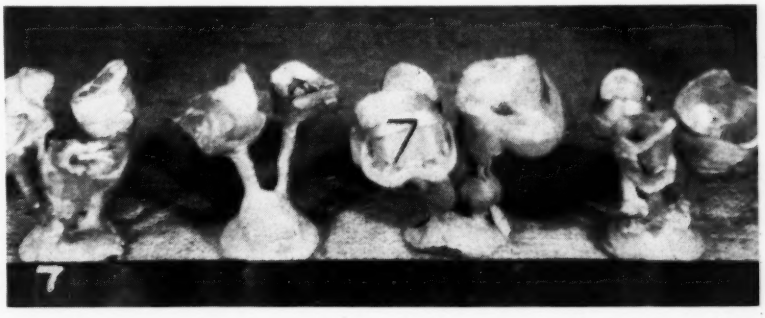
1. The upper teeth were prepared for cast veneer crowns. At this time a gingivectomy was performed to lengthen the clinical crowns (Fig. 5).

2. Copper band impressions were taken and gold copings were constructed (Fig. 6).

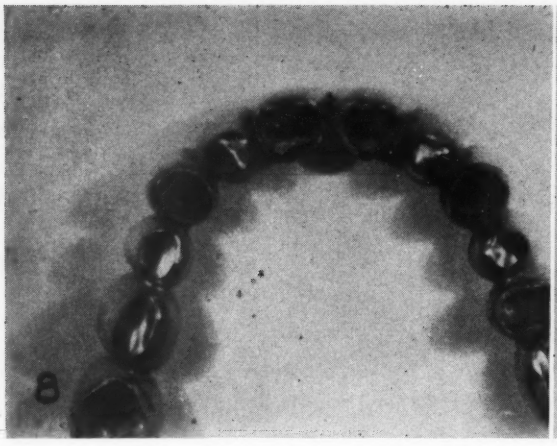
3. Final gold copings were made and a plaster impression of the entire arch was taken.

4. A remount bite was taken with zinc oxide-eugenol paste and both cases were remounted on an adjustable articulator to the patient's hinge axis. At this point the bite was restored to its normal vertical dimension.

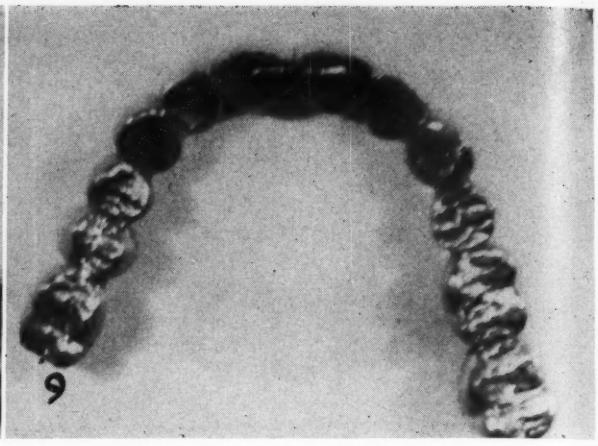
5. A continuous upper veneer crown fixed splint was constructed from the upper left second molar to the upper first molar. This molar was cantilevered from the right sec-



7. ***Gold crowns after casting.***



8. *Completed upper veneer crown fixed bridge, tissue side.*



9. *Completed upper veneer crown fixed bridge, occlusal view.*

10. *Completed cases in the mouth. Note the degree that the bite was able to be restored.*

11. *Completed cases in the mouth.*

ond bicuspid (Figs. 7, 8, and 9).

6. At the same time the lower posterior teeth were reset to give balance in lateral movements. Full anterior contact was established in the protrusive movement.

7. Both cases were inserted with a temporary cement and will be recemented from time to time in order to observe the case closely (Figs. 10 and 11).

Conclusion

The patient is pleased that full dentures were not constructed. Her general attitude and emotional outlook are better. Her speech has improved somewhat and she has received favorable comments on this factor from family and friends.

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A Hospital-Dental Procedure for HANDICAPPED PATIENTS

MANUEL M. ALBUM, D.D.S., Philadelphia

DIGEST

In the treatment of children with cerebral palsy, mental retardation, and other handicaps, the dentist occasionally encounters a patient who cannot be treated by conventional methods or under medication in the office. In these cases it is necessary to hospitalize the child and perform the dentistry under some form of general anesthesia. This illustrated article outlines in detail the various steps to be taken in cases where dentistry for the handicapped child must be performed in a hospital under anesthesia.

Preliminary Measures

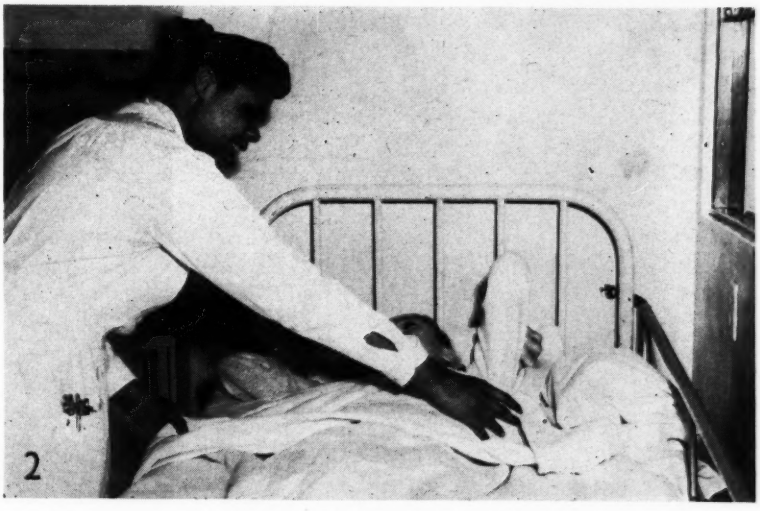
A coordinated hospital-dental routine simplifies dental procedures and affords the best care available to the patient with a minimum of discomfort.

Importance of Hospital Personnel—The chief requisite in arranging such a program is the cooperation of the hospital personnel involved in the care and treatment of the handicapped dental patient. The personnel handling the child ranges from the hospital receptionist to the floor nurse caring for the patient.

The Dental Resident—An important member of the hospital staff who will be concerned in treatment of the child is the dental resident. His complete understanding of the problem will help the dentist in performing the actual dental procedures more efficiently.

Preparatory Discussion—In setting up a hospital-dental program for the handicapped child or even the normal obstreperous and hard-to-manage youngster it is necessary to discuss with hospital personnel the nature of the handicapping condition as well as the best method for adequate care and treatment of the child. This measure will eliminate confusion and difficulties which may arise through lack of understanding of the child and what is involved in the treatment of the handicapped patient.

1. ***Interview with receptionist. This is the first contact with patient.***



2. ***The patient is put at ease by the floor nurse.***

Members of Hospital Personnel—The hospital personnel involved in the hospital-dental routine include the following persons:

1. Receptionist
2. Floor nurse
3. Medical resident
4. Surgical resident
5. Dental resident
6. Student nurses or orderlies
7. Hematologist and staff
8. Radiologist and staff
9. Anesthesiologist and staff
10. Operating room supervisor
11. Operating room nurse
12. Dentist
13. Recovery nurse

Specific Responsibility—Each of these persons has a definite task in the treatment of the hospital dental patient, the thorough understanding of which will contribute to a smoother hospital stay as well as an early dismissal for the patient.

Role of the Parents

It is extremely important that the parents be prepared properly for the hospital procedures by the dentist prior to the admittance of the child. Examination and x-rays of the teeth should be part of the child-parent discussion.

3. ***Medical resident obtaining complete history of patient as well as making a physical examination.***

Proposed Treatment Explained—The parents should be informed as to what will be done for the child, how long he will remain in the hospital, and the requirements the patient must meet with respect to the laboratory tests and anesthetic needs.

Time Schedule Described—The parents should be impressed with the necessity for having the child at the hospital by 12 o'clock noon of the day prior to the actual anesthetic procedure. This will allow sufficient time for proper evaluation of the child as well as to prepare the patient for an early morning operating room schedule the next day.

Hospital Reservation Made—While the parents are in the dental office, the dentist should call the hospital and make arrangements for bed space and list the patient on the operating room schedule. The dental resident will follow through to see that these arrangements are carried out and to notify the dentist if there are any changes.

4. ***Examination by dental resident.***

5. ***Blood chemistry studies by hematology department.***

6. *Chest x-rays as well as skull x-rays of the patient are taken.*

7. *Examination by dentist to interrelate tests and conditions of patient.*

Hospital Staff Members Concerned in Procedure

The Receptionist—The first person to see the child and the parents at the hospital is the receptionist. Her understanding of the problem will do much toward placing the child and the parents at ease. The receptionist not only escorts the child to the room set aside for his needs, but also sees that the necessary hospital permission forms are signed. This is extremely important, since the dentist cannot operate on the child nor can anesthesia be administered unless the parent signs these permission slips. These forms safeguard the hospital as well as those involved in the procedural treatment of the child.

Floor Nurse—The floor nurse is acquainted with the nature of the child's handicapping condition. His needs can therefore be amply fulfilled. It may be necessary to continue the child's daily medication and this should be called to the attention of the floor nurse and the medical resident.

Medical, Surgical, and Dental Residents—In the meantime the medical, surgical, and dental residents have been notified by the receptionist that the patient is in the hospital. The medical resident in charge of the child should give him a thorough physical examination.

Case History: A complete case history of the patient will be of benefit to the anesthesiologist in the administration of the anesthesia. Any previous hospital records should be attached to the dental forms.

Abnormal Conditions Investigated: The heart, lungs, throat, nose and ears should be carefully examined. Fevers or abnormal conditions should be investigated before proceeding with anesthesia or operative techniques.

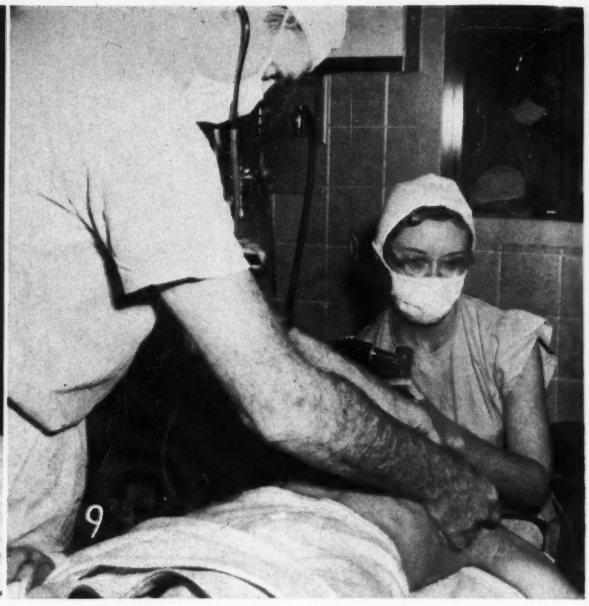
Routine Orders Issued by Dentist

Routine orders requested by the dentist can be written up and carried out by the resident. These consist of chest x-rays to determine any hidden lesion, benign or malignant; tuberculosis; pneumonia. Craniostenosis, or premature closure of the saggital suture, can be ascertained by skull x-rays of the patient. If this is evident, dental procedures should be deferred since the child will not endure the long anesthesia and will result in a fatality.

Blood Chemistry — This study should consist of erythrocyte and leucocyte counts, hemoglobin determination, and bleeding and clotting time tests. Should the hemoglobin fall below 10.0 grams per 100 cubic centimeters by volume of blood, the patient is a poor risk for anesthesia. He should be discharged and his blood level built up with liver and iron injections. In case of a dental emergency where the hemoglobin count is slightly below normal, it may be necessary to proceed with the operative work. A blood transfusion is given to raise the hemoglobin to normal.

Urinalysis—This should complete the laboratory tests on the dental pa-

8. ***Patient received by operating room supervisor.***



9. ***Anesthesia department administering anesthesia and checking the patient.***

tient to determine the presence of sugar or albumin in the urine as well as any other abnormality.

Oral Examination—The dental resident should examine the child's mouth and take additional dental x-rays if necessary. He should notify the dentist performing the operation that the patient is now in the hospital.

Premedication—After he has had the opportunity to evaluate the patient, the anesthesiologist writes orders for the proper premedication. This should be done one hour prior to the actual induction of anesthesia and may consist of Demerol®, Nembutal®, or scopolamine, in quantity calculated according to the weight and age of the patient. If the patient is scheduled for the operating room at 8:30 a.m., premedication should be written for 7:30 a.m. A child who is properly premedicated will be a more receptive patient under anesthesia and will allow the anesthesia to proceed more smoothly.

Food Withheld—No food should be given to the child after 12 midnight of the day prior to the actual anesthetic technique. Clear liquids may be given up to 3 a.m. preceding the anesthesia.

Final Steps in Routine

The child should be examined by the dentist and the dental resident some time during the day of admission. This will enable the dentist to determine if any new oral conditions are present, afford him the opportunity to evaluate all the laboratory and x-ray conclusions, as well as to confer with the medical resident, anesthesiologist, radiologist, and other hospital personnel involved in the welfare of the child.

Hospital Forms Should Be Completed—At this time it is advisable to see that all the necessary hospital forms have been properly completed. Should any of the tests fall below

10. ***Operative dentistry under general anesthesia. The mouth is completely rehabilitated at one sitting.***

11. ***Patient watched by nurse and member of anesthesia department in recovery room.***

normal, the dentist should investigate the cause and if necessary, defer the pending operation until it is safe to proceed.

Presurgery Examination—The dentist should be in the hospital an hour before the actual operation. This will enable him to examine the child and to make certain that everything is in order for the dental procedures.

Anesthesia Administered—The patient is taken to the operating room by the nurse or orderly. The anesthesia staff then takes charge of the child.

Period in Recovery Room—Anesthesia is given to the patient according to a prescribed technique, and the necessary dental treatment is completed.[1 2 3 4] After the completion of the dentistry, the patient is removed to the recovery room prior to returning to his room. This provides greater safety and more rapid recovery for the child.

Postoperative Procedure — The postoperative orders should be written to include the following notations: (1) Examine the patient every 15 minutes for vital signs, (2) continue the intravenous drip solution, (3) soft diet, and (4) examination by the medical resident and the anesthesia department prior to discharge, provided the patient has voided. The dental resident should be certain that the dentist has written the necessary orders and should also carry them out.

Conclusion

Complete teamwork and understanding on the part of the hospital personnel involved in the care and treatment of the dental patient and cooperation with the dental surgeon will ensure satisfactory results, rapid recovery, and early discharge from the hosiptal.

1930 *Chestnut Street*

12. ***The patient leaving the hospital.***

[1]Album, M. M.: Dental Procedures and General Anesthesia in Cerebral Palsy, DENTAL DIGEST **58**:296 (July) 1952.

[2]_____: Operative Dentistry Under General Anesthesia for Difficult Patients, J. Dentistry Child. **20**:157-161 (4th Quart.) 1953.

[3]Album, M. M., and Deming, M. N. Van: Trichloroethylene Anesthesia for Operative Dentistry on Handicapped Patients, Oral Surg., Oral Med., and Oral Path. **7**:488-498 (May) 1954.

[4]Album, M. M.: Dentistry for the Handicapped Child, Eastman Kodak Journal **27**:57-67 (April) 1954.

TRANSOGRAPHICS

and the Transograph—Part Two

HARRY L. PAGE, Valparaiso, Indiana

DIGEST

In this, the second of a two-part article, the principles underlying a procedure for replacing conventional concepts in articulation methods are described in detail and a mechanism for applying this modern technique is described. Step-by-step instructions are given for the use of the appliance.

Procedural Steps

The first step in capturing functional jaw movements is the location and marking of the transverse condylar rotational control centers or hinge-axes. This is done by utilizing a simple geometric axiom that the loci of all points on a given radius have a common center.

Geometric Rule Applied—If one were to stick a pin in the spoke of a wheel at some point such as X in Figure 4 and were to swing the wheel back and forth, the pin would be seen to follow an arcing course as shown.

All Arcs Concentric: No matter where on the spoke the pin was placed, it could arc whenever the wheel was rotated and all arcs made by the pin would be concentric.

No Arcing Movement Caused: If a pin, however, were stuck into a spot over the exact center of the axle at the wheel hub (A, in Figure 4), rotating the wheel would cause no arcing movement of the pin: it would remain over one spot and spin. This spot could be none other than the extension of the rotational center or the hinge-axis of the wheel.

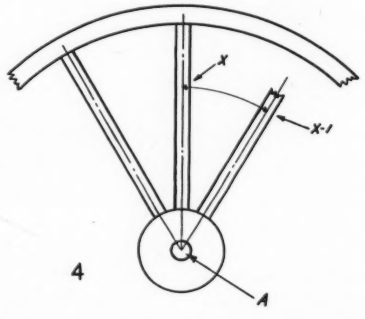
Step One in Procedure—Figure 5A shows the same principle applied to the jaw:

1. A dismountable tray (B) carrying plaster that grips the teeth rigidly is secured to the mandible. For the edentulous case, a jaw clamp (Fig. 5B) is used.

2. To the tray stem or jaw clamp, a hinge bow (C) having side arms (D) that are adjustable in all directions independently of one another is attached.

3. The hinge bow is so adjusted on the head that the condyle pins (E) are pointed toward the skin approximately over the individual condylar axes. The patient then opens and closes rhythmically through a limited arc with the condyles maintained in hinge position.

4. Using the individual adjustments in the hinge bow side arms, the pins are moved until they are over the spot where they cease to arc visibly



4. ***If a pin were stuck into a spot over the exact center of the axle at the wheel hub (A), rotating the wheel would cause no arcing movement of the pin: it would remain over one spot and spin.***

and where only spinning motion appears to take place. These are the projections of the transverse rotational control centers or hinge-axes of each condyle.

5. The nibs of the pins are inked and slid inward until they make light contact with the skin, thus leaving a dot marking the location of the hinge-axes projection.

6. The whole apparatus is removed from the head. This entire operation consumes less than fifteen minutes.

Step Two—The second step (Fig. 6) is the interrelation of the hinge-axes, the cranial plane and the upper alveolar arch. This is done in the following way:

1. A bite fork is used in the customary way to which is attached a head relator (F) which establishes a cranial plane.

2. The head relator is adjusted to any convenient anatomic cranial landmark, the one used most often being a horizontal across the pupils of the eyes.

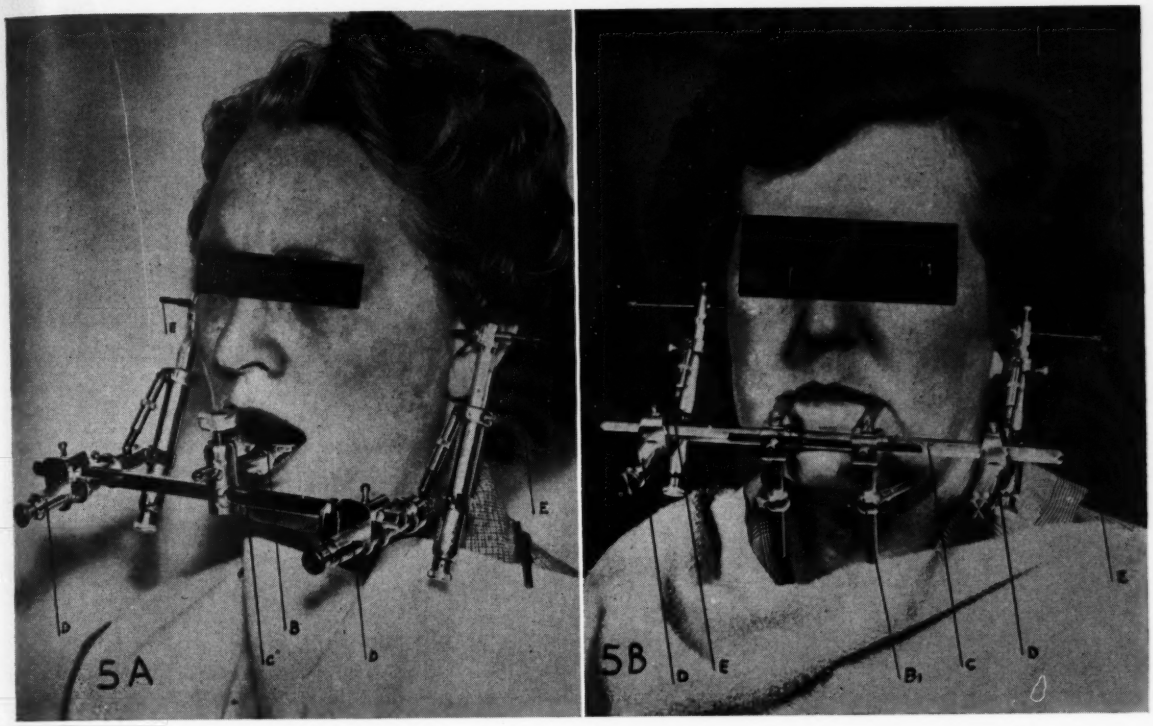
3. When the head relator has been oriented and attached, the hinge bow is added. It is locked in position and the side arms are again adjusted until the condyle pin-points are spotted on the hinge-axes projection dots previously marked on the skin.

4. All side arm adjustments are ensured against possible change by tightening the locking screws (G).

5. The hinge bow and head relator assemblies are now removed intact and taken to the laboratory where they will transform themselves automatically into an articulator that is literally "the head on the bench."[10]

6. This entire operation seldom requires ten minutes.

[10]Albinson, Reuben N.: Original expression.

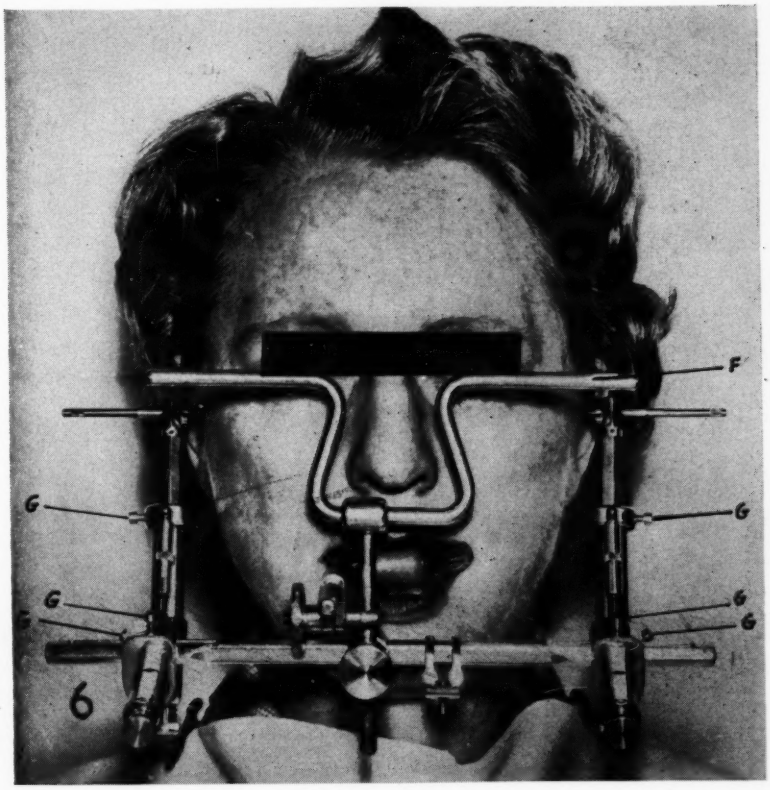


5A. *A dismountable tray (B) carrying plaster that grips the teeth rigidly is secured to the mandible.*

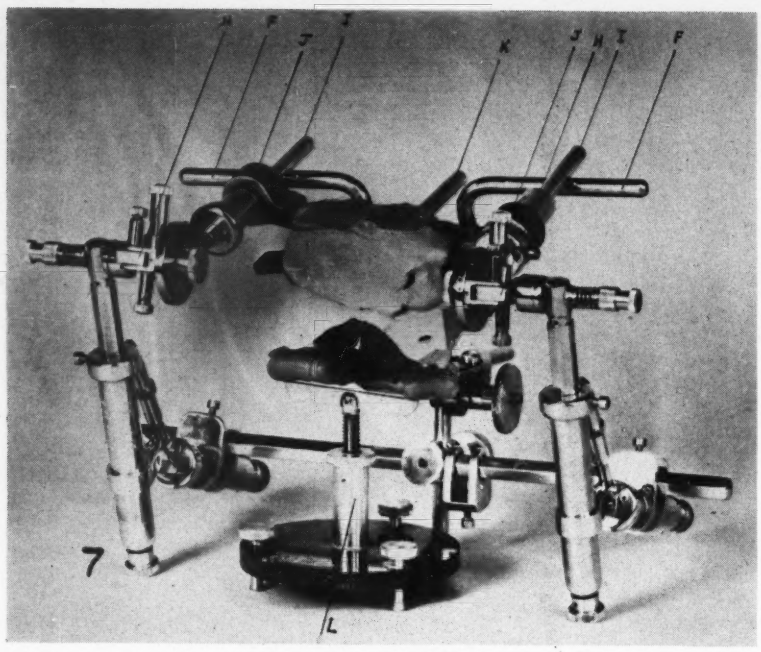
5B. *For the edentulous case, a jaw clasp is used.*

The Upper Mounting—In the laboratory (Fig. 7) axles to which are attached adjustable condyle slide and slider assemblies (H), apposing arms (I), mounting fingers (J), and a cam follower (K) take the place of the condyle pins. The bite fork and bite are braced against possible sagging under the weight of the upper cast by a self-leveling mounting support (L). The upper cast is located in the wax matrix and is attached with stone to the mounting fingers (J) and, hence, to the upper frame of the Transograph in the conventional manner.

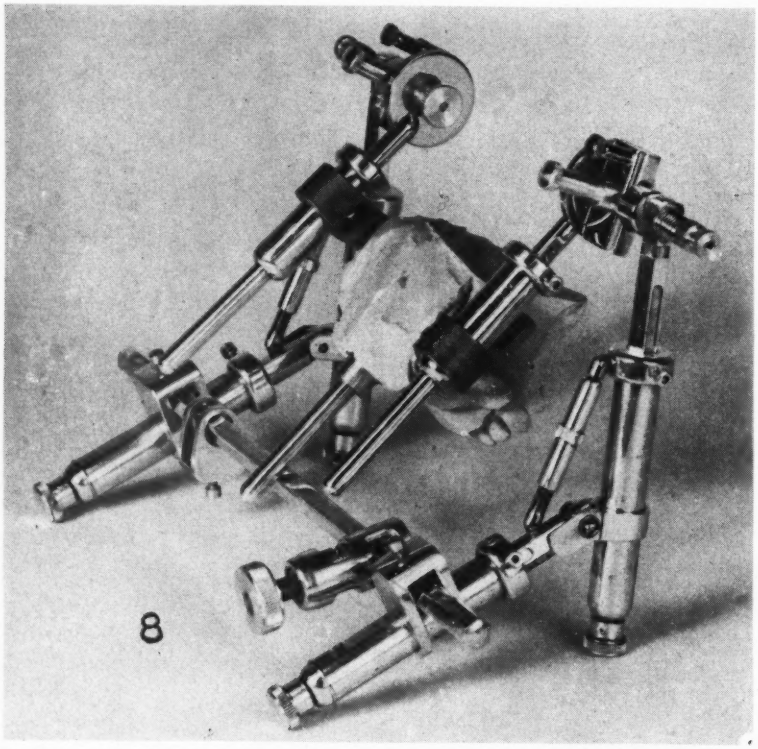
Cranial Relation Permanently Established—When the connecting stone has set, the mounting is checked to make sure that the cast was accurately seated in the matrix and that the apposing arms (I) were in contact with the head relator rest bars. Both having been verified, the bite fork and the head relator are detached (Fig. 8). No concern need be felt over the fact that the Transograph has assumed the collapsed position shown. The cranial relation has now been permanently established and



6. *Interrelation of the hinge-axes, the cranial plane, and the upper alveolar arch.*



7. *In the laboratory, axles to which are attached adjustable condyle slide and slider assemblies (H), apposing arms (I), mounting fingers (J), and a cam follower (K) take the place of the condyle pins. The bite fork and bite are braced against possible sagging under the weight of the upper cast by a self-leveling mounting support (L).*



8. *When the connecting stone has set, the mounting is checked to make sure that the cast was accurately seated in the matrix and that the apposing arms (I) were in contact with the head relator rest bars. Both having been verified, the bite fork and the head relator are detached (Fig. 8).*

will always be correct no matter how or in what biting position the lower may be joined in the Transograph.

Step Three—The next step is to choose a hinge mounting bite and to relate kinematically the lower alveolar arch to the upper:

1. Several wax bites of varying thicknesses and occlusal penetrations are taken in the patient's mouth.

2. The Transograph is turned upside down (Fig. 9) with the jaw movement guide (M) acting as a stop to hold the upper and lower frames at a convenient separation.

3. One of the hinge bites is selected to orient the upper and lower casts.

4. The bite chosen will have sufficient tooth support to stabilize the lower cast on the upper and will be free of occlusal contact through the wax.

Kinematic Hinge Bite Tested

As shown in Figure 10, tests are made to determine whether the patient has or has not given the correct kinematic hinge bite. This determination is based upon the theory that a patient cannot make exactly the same involuntary mistake three times at three different occlusal levels.

Correct Mounting Demonstrated—When the Transograph accepts perfectly three wax bites having an occlusal separation of two, four, and of eight thicknesses of wax, it follows that the instrument is not only mounted correctly, but also its closure arc and its Bennett movement are kinematic duplicates of the patient's jaw closure arc and Bennett movement. The Transograph now controls and will duplicate the simple opening and closing movements plus the Bennett.

One Functional Motion not Incorporated—The combined medial-protrusive movement and the closing chewing angle in the transverse plane, is the only functional motion that remains to be incorporated. This will be added later, after the crowns and/or dentures have been adjusted for simple hinge occlusion.

Method of Proof—The operator does not depend upon what he *sees* at the wax bite for proof of the correct

hinge bite mounting and kinematic relationships discussed in the previous paragraph:

1. Atop the condyle slider assemblies (H) are two tall screws (N). These screws are tapered on the end. They turn down through bosses (N_1) to fit into V-shaped seats in the condyle plates or slides, thus locking the slides and sliders together.

2. All four screws are loosened when the wax bites are being tested. This transforms the Transograph into a universal joint.

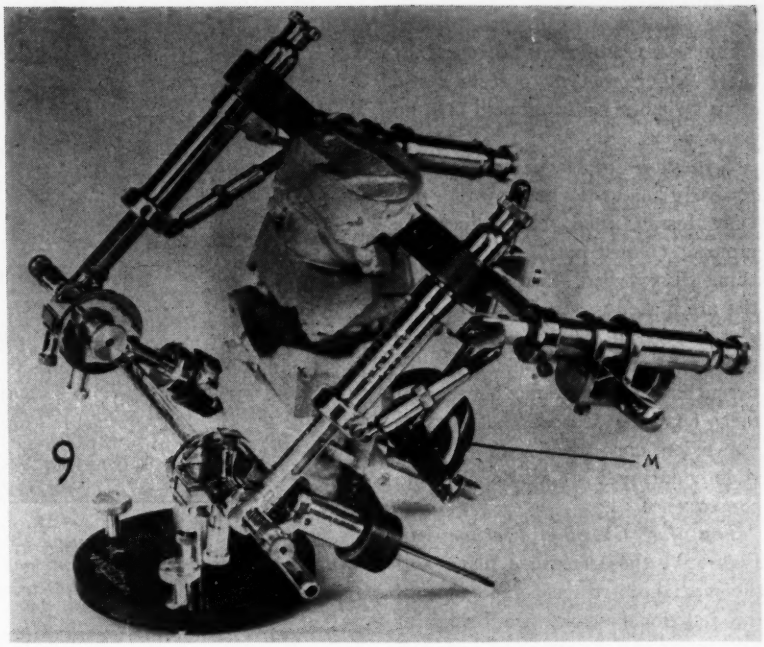
3. If the slides do not appear to move in their sliders as the teeth engage the wax matrix, it is indication that there is no discrepancy. To make sure, however, the tapered screws are turned down in their seats while the slides are watched closely.

4. Unless the tapered screws bottom perfectly in their V-shaped slide seats, the slides will move in their sliders. An error as tiny as one-fiftieth of a millimeter *in any direction* is easily detectable.

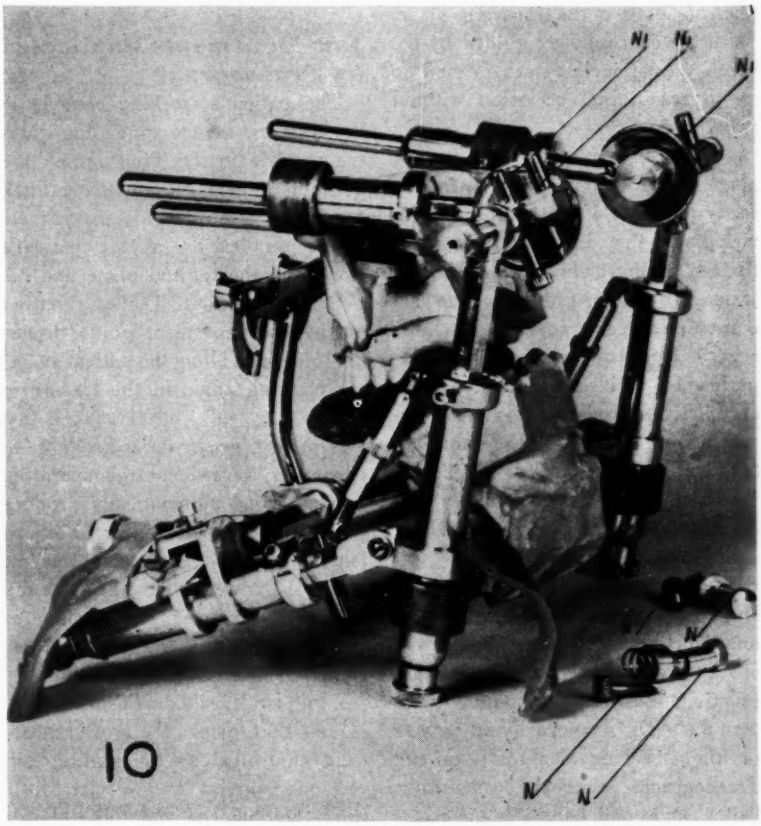
Possible Error Corrected—When an error is present, whether it be in the mounting or in the bite, a new lower mounting becomes necessary. Using any one of three or more wax bites that appear to create the same discrepancy in the Transograph, the lower is remounted and varying thicknesses of bites are tested as before. Not until the Transograph accepts multiple thickness bites perfectly is the mounting acceptable.

Test for Prematurities in Hinge Occlusion—The teeth are next tested for prematurities in hinge occlusion. Again, the eyes are not trusted. One one-thousandth cellophane is interposed between every cusp to fossa contact. With the weight of the upper cast as a constant, it is readily determined which contact may be heavier, lighter, or absent. Variations are detected by the amount of friction each contact imparts to a pull on the cellophane.

Prematurity Marked—The first prematurity as revealed by the cellophane is marked with silk dental tape. Silk or nylon tape is used because only the exact prematurity is marked and with a perfect outline—not a



9. ***The Transograph is turned upside down (Fig. 9) with the jaw movement guide (M) acting as a stop to hold the upper and lower frames at a convenient separation.***



10. ***Test bite mountings. Note thin and medium thickness bites leaning against Transograph. Thick bite in Transograph. All thicknesses were accepted.***

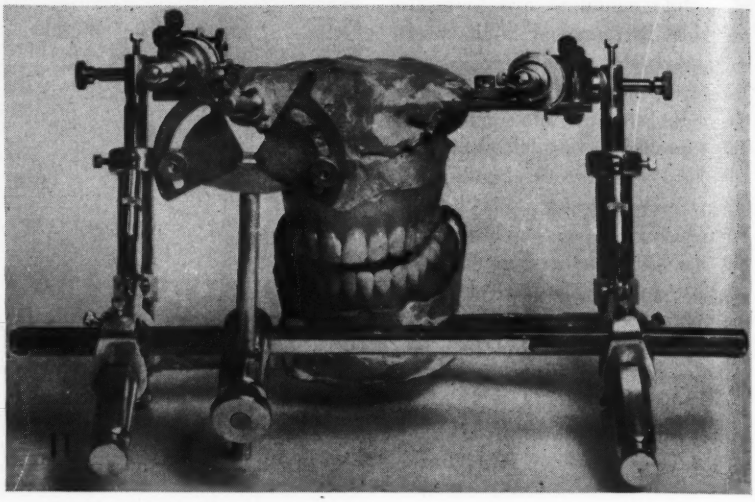
gross smudge. Red or green inked ribbons are preferred because they mark either gold or porcelain and show up much better on gold than do other colors.

Reduction of Prematurity—Successive prematurities are now reduced. Only fossae, sulci, or inclines are ground; contact marks on cusp tips being disregarded. These prematurities are picked up one by one and reduced until all teeth are in full and equal contact and all contacts are between cusp tips and the bottoms of their opposing fossae. That verticle dimension may have been changed slightly during this operation is of no consequence.

Test for Chewing Freedom—In Figure 11 the transverse plane and the medial-protrusive components of the functional stroke are being incorporated and the teeth will be tested for chewing freedom. The jaw movement guide (M) has been attached to the Transograph and the cams (O) have been set to the patient's closing chewing angle in the transverse plane. With the cam follower guided by the cams, cuspal inclines are formed so as to reach final occlusion without preocclusion contact.

Pantographing of Flattest Chewing Angle Unnecessary—While it is perfectly possible to pantograph and incorporate the individual patient's flattest closing chewing angle in the transverse plane with complete accuracy (his steeper angles may be disregarded for obvious reasons), experiments, verified by ample experience, have proved that it is not necessary to do so. Setting the cams between 55° and 60° with reference to the cranial plane has consistently produced excellent results in hundreds of consecutive cases of all types.

Interference can be Eliminated—In the remote event that a chewing angle between 55° and 60° *should* prove too steep to accommodate actual function, it is a simple matter to return the teeth (temporarily set crowns or tissue-bearing dentures) to the Transograph, lower the cams to a flatter angle and eliminate the interferences as they show up on the Transograph. Since the Transograph duplicates preconscious jaw movements, an elimination on the instrument means a like elimination in the mouth.



11. ***Beginning functional closing stroke. The jaw movement guide (M) has been attached to the Transograph and the cams (O) have been set to the patient's closing chewing angle in the transverse plane.***

Jaw Movements Duplicated by Transograph

The patient's working condyle in the head and the corresponding working condyle in the Transograph are both in hinge position during final, functional closure. This assures accurate duplication of the patient's closing in the sagittal plane and his Bennett movement. The cam setting of the jaw movement guide directs the lower cast along the patient's closing chewing angle in the transverse plane.

Straight Line Distances Produced—Obviously, the two controls operating together must automatically produce the straight line distances or chord lengths travelled by jaw movements under the control of the sagittal and vertical condylar axes. Only the arcs of movement subtended by these chords remain to be considered.

Condylar Axes Equivalents in Machine—Fortunately, the arcs of movement controlled by the sagittal and vertical condylar axes deviate little from their chords and these chords are quite short. This makes it feasible to work with equivalents in the instrument. Since the Transograph revolves around mechanical *axal* control centers, it creates these arcs as readily as it creates the Bennett movement; the axal centers produce a torque that flexes the mechanisms supporting the axles until they automatically assume and maintain the correct centers for the combined movement arcs.

Cuspal Angles Rarely Reduced—No functional interferences have so far been found that have necessitated a chewing angle of less than 50°. On occasion, it has been thought expedient to humor a dental hypochondriac or a bruxomaniac who has been indoctrinated with "balance" and "lateral freedom" and therefore fancies himself an authority, by reducing the cuspal inclines abnormally. Since the chewing angle may be changed at will, this has presented no problem. The real problem has usually turned out to be the patient.

Patient Becomes Problem—Once the hypochondriac patient has been granted the low cuspal inclines he has demanded, experience has shown that he will usually charge the operator with having introduced some other, wholly imaginary defect, and while this is supposedly being corrected, will insist upon having the cuspal steepness restored.

Reduction of Cusps Inadvisable—

While the Transograph will duplicate exactly any subject's bruxomatic laterals if it should be desired, a reduction of cusps to permit a patient to indulge in bruxism or bruxomania would seem to make the dentist an accessory to a pathologic habit. It would almost appear to be on a par with prescribing an anesthetic as a *cure* for some such pernicious habit as pounding one's thumb with a hammer. This hardly seems compatible with dentistry's role as a healing profession. The aim of dentistry should be to promote good oral function, not detrimental practices.

Normal Jaw Movement in Function

It becomes apparent that there are four possible interfering surfaces on the working side of the jaw and two on the nonworking, not including the surfaces that might contact prematurely in simple hinge occlusion. These should have been removed by the method described previously and before checking the chewing strokes.

On the Working Side—The four possible interfering surfaces on the working side are: (1) the lower external buccal, (2) the lower internal lingual, (3) the upper internal buccal, and (4) the upper external lingual.

On the Nonworking Side—The two possible interfering surfaces on the nonworking side are: (1) the lower internal buccal, and (2) the upper internal lingual.

Interferences Illustrated—In Figure 11 the patient is shown chewing on the left side. Functional interferences will be marked by the articulating ribbon both on the working (left) and the nonworking (right) sides. Cutting the inclined surfaces only, these interferences will be removed with a small inverted cone stone (Chayes 29 grit recommended). When the chewing stroke moves freely into complete occlusion with the cam follower maintaining continuous contact with the cam, the articulation will be finished for function on the right side.

Procedure Repeated—The procedure is repeated with the left side working after which the articulation is ready for the mouth. Note that conventional so-called "balance" is entirely ignored and lacking. In true function with well-articulated teeth there is no tooth contact, no "balance" until final and total occlusion.

Conventional "Balance" Absent—The advocates of "balance" as a *bruxomatic necessity* in articulation should realize that it can be attained only at the cost of no contact between posterior teeth in simple hinge occlusion. It is mathematically impossible to give a patient "balance" in bruxomatic lateral motions and solid posterior occlusion at the same time. The operator may take his choice: give the patient good functional articulation or pander to a psychologic abnormality.

Rearticulation Required by Tooth Movement—Because of moisture absorption from mouth fluids, the acrylic in which artificial teeth are embedded will cause the teeth to move, sometimes within a few hours. While metal bases can prevent the acrylic from creating *tissue* misfits, they cannot eliminate this tooth movement. Consequently, full and partial dentures must be returned to the Transograph the day after insertion for rearticulation. Occasionally, this tooth movement continues and must be corrected two or three times. It is also possible that the patient's jaw may begin to retrude from a temporary protrusive fixation, a subject covered in another presentation.[11] When this occurs, corrections as described in that paper must be made.

Postoperative Adjustments Unnecessary—In the absence of joint disease or a temporary protrusive fixation,[11] full mouth reconstruction or periodontal cases are finished when installed or ground. This is possible because the Transograph is actually "The head on the bench."[10] It duplicates, not just the static jaw positions but the functional kinematics of the jaw as well. Therefore, teeth that function smoothly in the Transograph will function with equal facility in the mouth. Postoperative mouth adjustments are unnecessary.

---

[11]Page, Harry L.: Temporary Jaw Protrusion, Its Causes and Correction, DENTAL DIGEST **62**:-20-25 (Jan.) 1956.

104 *Garfield Avenue*

The Appreciation of Flavors

EDWARD C. CLARK, M.D., and HENRY W. DODGE, JR., M.D., Rochester, Minn.

It would seem that all components of sensation experienced in the buccal cavity, nasopharynx and adjacent structures, vision, hearing, and the psychologic state of the person at the moment, as well as olfaction, may combine to form a sensory composite which is identified as "flavor" at a cortical level in the brain. In many people, however, it would appear that olfaction is of primary importance, and that the loss of this sensation deprives the person of his ability to appreciate flavors. Others, however, can continue to identify and enjoy the flavor of many foods in spite of the absence of the sense of smell. Whether this difference in responses obtained is due to some unrecognized qualitative or quantitative individual variation in the sensory end organs of the buccal cavity and nasopharynx, or to central cerebral ramifications, or to varying psychologic factors, or to a combination of these, cannot be determined at this time. However, the difference in abilities among anosmic people to distinguish flavor would suggest the possibility, as yet unproved, that such persons might be trained to better identify and enjoy the flavor of food.

To quote an old Spanish proverb: "In matters of taste there can be no dispute."

From *Postgraduate Medicine* **17**:-144 (February) 1955.

Aids in GENERAL ANESTHESIA

MANVILLE S. HARRIS, D.D.S., Rochester, New York

DIGEST

Much interest is being shown by dentists in restorative techniques under general anesthesia. This article describes four simple and practical devices that have been found helpful by the author for use in treatment under anesthesia.

Mechanical Device for Allaying Fear

The psychologic impact of general anesthesia on children has occupied the attention of many skilled and interested people. Space helmets with ports for the ingress and egress of gases, dolls with feed apertures, are but two of the many approaches to allaying fear by mechanical devices. In Figure 1 is shown a face mask with characters from the comic pages pasted therein.

Attention Distracted — With the mask held off the face and gases flowing, attention is directed to the pasted characters and a story, adventuresome, romantic, or of whatever type suits the personality of the young patient, is unfolded.

Induction Completed—At a proper analgesic moment the mask is brought firmly to the face and induction completed. By this means the great majority of children may be managed with avoidance of the clashes frequently encountered.

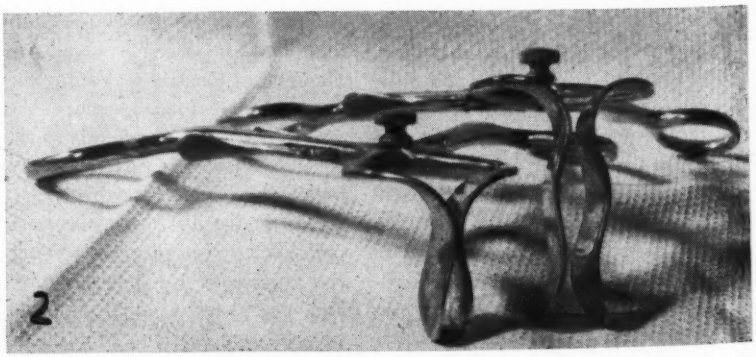
Mouth Props with Longer Blades

In the use of force mouth props the shorter prop used against existing teeth is entirely adequate. If, as used in full mouth extraction, however, the shorter prop is placed against edentulous areas, it slips and offers considerable resistance to attempts to maintain its position. The longer blades as shown in Figure 2, go well into the mouth over the tongue and palate and obviate the distress accompanying use of the shorter device.

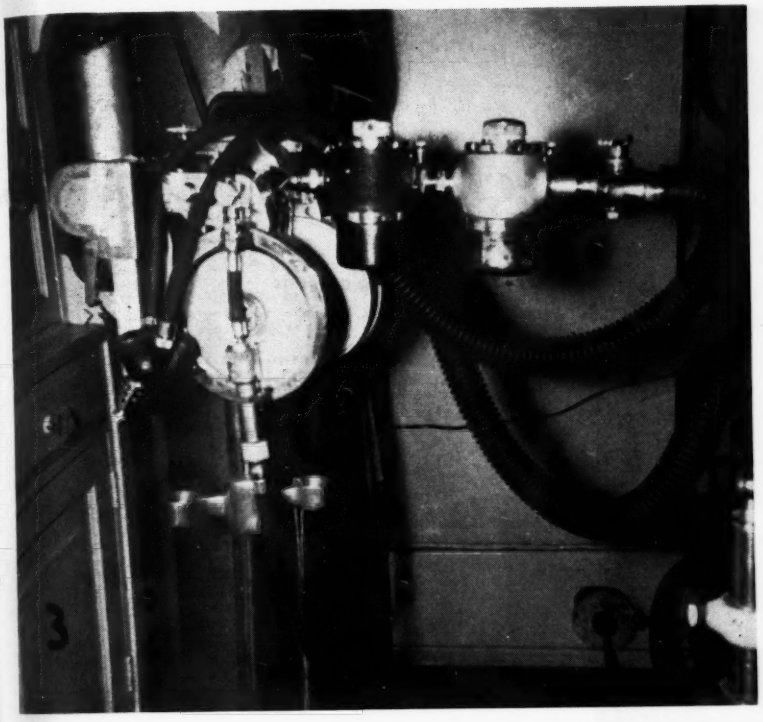
Vaporizers in Tandem

The two generally accepted synergists used with nitrous oxide and oxy-

1. *Decorated face mask to distract the child patient's attention thereby allaying fear of anesthesia.*



2. *Longer mouth props prevent the distress that accompanies the use of the shorter device.*

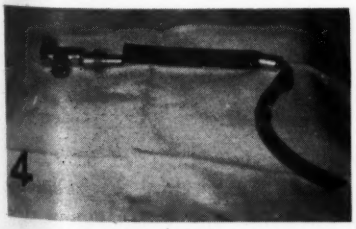


3. *Vaporizers in tandem. The vaporizers may be used singly or together.*

gen are trichloroethylene and Vinethene®. In Figure 3 are shown two vaporizers in tandem. The one closer to the anesthetic machine contains trichloroethylene and the more forward one, Vinethene®. These may be used individually or both open at the same time, one drug potentiating the other. Attached to the vaporizer in front is a two-way valve permitting gaseous flow to either a face mask or nasal inhaler.

An Adaptation of an Endotracheal Setup

In the setup shown in Figure 4, the exhaling valve feed is inserted in the delivery hose of the anesthetic machine. To the exhaling device on the patient side is placed an adapter, to which is added a short rubber tubing of sufficient dimension to permit adequate gas flow.



4. *An adaptation of an endotracheal setup. This device permits easier access to the anterior teeth than is attained by the use of the nasal inhaler.*

Second Adapter—Another adapter of the operator's choice is inserted in the short tubing on which is fastened a nasopharyngeal tube (or endotracheal tube).

Method of Application—With the patient in the required plane of anesthesia, the tube is inserted in the nostril and the setup taped to the forehead. The other nostril is walled off.

Easier Access to Anterior Teeth—This device permits much easier access to the anterior teeth than is attained by the use of the nasal inhaler.

Summary

Four devices for use in general anesthesia have been described. Each of these aids has been used with success by the author.

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Anxiety States

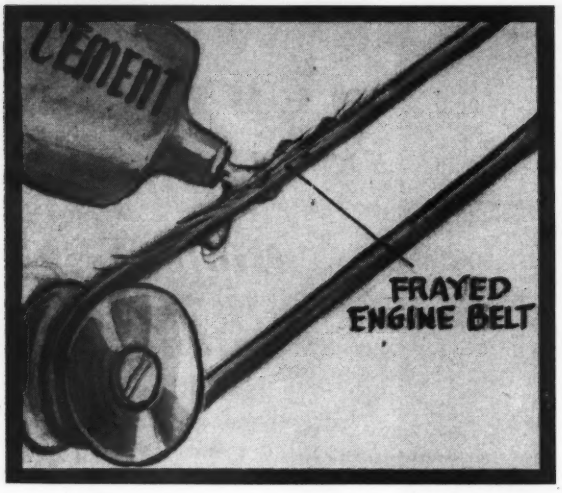
Anxieties and tensions often are the basic factors causing many patients to seek medical advice. Professional men should be aware of the positive signs and symptoms of functional disorder.

One of the most common symptoms of anxiety is the headache usually affecting the back of the head and neck. Occasionally, the frontal area is involved or, with severe psychoneurotic disorder, the vertex. Often, the patient is unable to read or think because of introverted concentration. There may be trouble in getting to sleep or, in other instances, the patient may awaken early and not be able to return to sleep.

Inadvertent hyperventilation may cause dizziness which is frequently a conditioned reaction to stress. As a result of persistent hyperventilation, tachycardia and palpitation occur and may be associated with faintness and sensation of tightness of the chest.

Anorexia is common and frequently occurs for brief periods with recur-

(*Continued on page* 226)



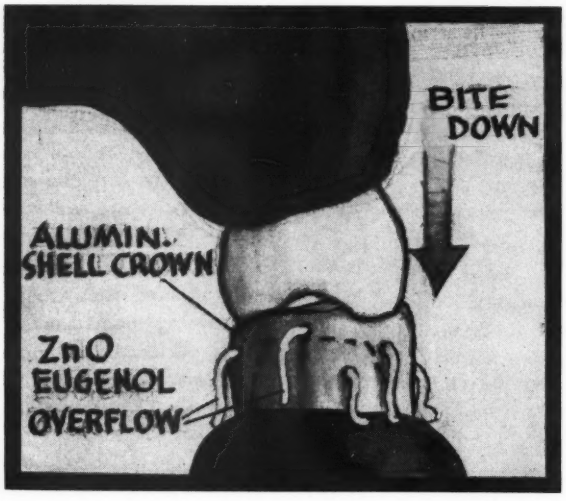
1

Clinical and Laborator

Frayed or Worn Engine Belts

Weston D. Brown, D.D.S., Cowiche, Washington

1. When an engine belt begins to wear and fray and there is no replacement available, apply Duco cement to the loose threads.

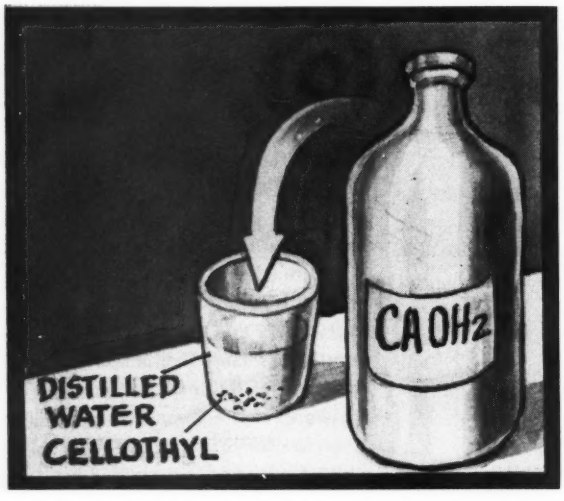


2

Seating a Temporary Crown

David Waldman, D.D.S., Flushing, L.I., New York

2. If the temporary aluminum shell crown is perforated, the excess zinc oxide-eugenol paste is extruded and permits the proper seating of the crown.



3

A Preparation for Pulp Capping

Stewart M. Johnson, D.D.S., Pittsburgh

3. Add a few granules of Cellothyl® (Chilcott) to one-half ounce of distilled water. Let stand until it assumes a gelatinous form. Mix calcium hydroxide with the Cellothyl preparation. This paste readily adheres to cavity walls.

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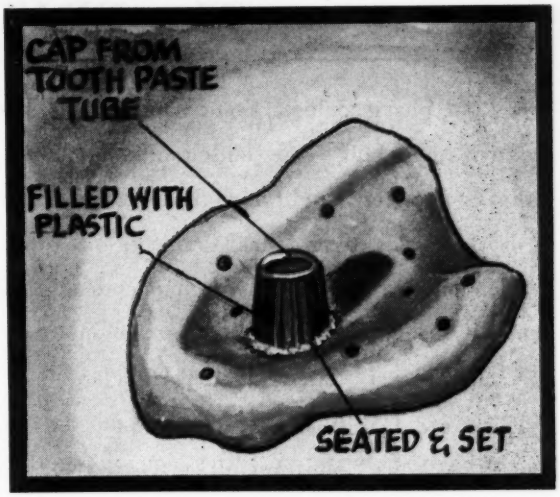
SUGGESTIONS . . .

A Handle for a Plastic Impression Tray

Ben E. Pleshette, D.D.S., New York

4. Perforate a plastic cap from a toothpaste tube. Attach the cap to the plastic impression tray with a mixture of self-curing acrylic.

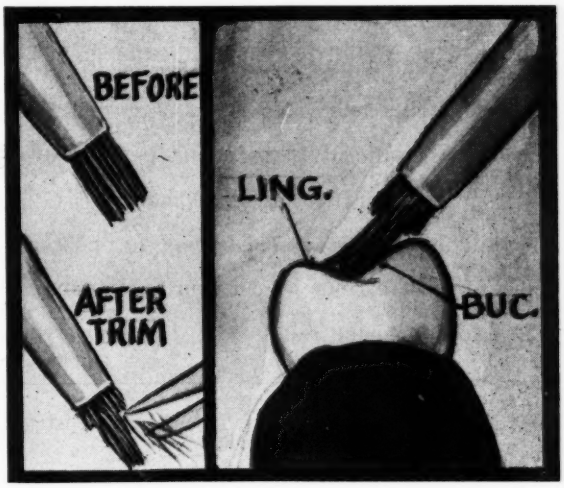


4

Polishing Restorations

T. D. Schaad, D.D.S., Kansas City, Missouri

5. By trimming a bristle brush as shown, it is possible to secure a polishing instrument that will polish the buccal and lingual inclined planes of a restoration simultaneously.

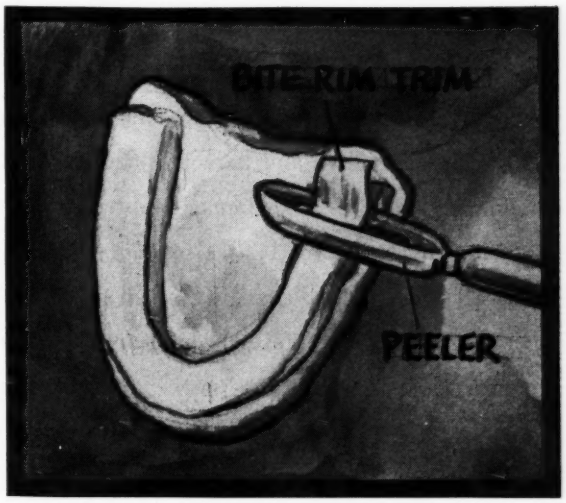


5

Trimming a Wax Bite-rim

Hubert Hayes, D.D.S., Petoskey, Michigan

6. An ordinary potato peeler makes a suitable instrument to use to remove the strips of wax from a bite-rim.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S Page

ANY SAFE pharmacologic agent that will produce sedative, hypnotic, and muscle-relaxing effects would be a welcome addition to the armamentarium of the dentist. So long as fear, anxiety, and apprehension are common reactions among dental patients any drug that will alter these reactions favorably should receive attention from clinicians.

There are two such new preparations on the market (Miltown® and Equanil®). Their chemical structure and biologic action are, from reports, quite similar. The *Journal of the American Medical Association* has published two articles on Miltown.

These two tranquilizing agents were first used by psychiatrists to relieve anxiety, tension, fear, and psychosomatic symptoms among persons suffering from the several forms of psychoneurosis. The improved or recovery rates, except for psychotic depression, were from 70 per cent to 95 per cent.

In addition to the relief from the major symptoms of nervous disease the tranquilizing drugs were found to be valuable to reduce premenstrual tension and to improve sleep.

Every dentist who has had any extensive clinical experience has learned that menstrual stress is a real and common entity in practice. Women who are cooperative and tractable patients in the intervals between menstrual periods are often found to be extremely sensitive and nervous during dental appointments that are held immediately preceding or during menstruation. It is also known among dental clinicians that the quality of sleep that is experienced the night before a dental appointment has an important bearing on the behavior of the patient during the appointment.

The standard dose for these drugs is one 400-milligram tablet after each meal and one at bedtime. For use in preoperative sedation before a dental appointment a smaller dose from the standard has been suggested: two 400-milligram tablets each day for three days prior to an appointment and one tablet one hour before the appointment.

These tranquilizing drugs are not habit forming. They are nontoxic. The side effects were minimal and consisted of pronounced drowsiness. In a series of 187 patients only three showed any form of allergic reaction. In these cases urticaria and edema were present.[1]

In another series of 104 patients the author commented:[2] "All patients who reported positive results described the following chief effects: lessening of tension, more complete relaxation, more prolonged and more restful sleep, and ability to feel at ease in groups and when speaking before groups, as well as in the presence of authoritarian figures. Then, Miltown may be regarded as having not only sedative, hypnotic, and soporific qualities but also importance in alleviating the distressing symptoms of anxiety without (after a few days' use) the associated symptoms of dizziness and grogginess common to the usual sedative preparation and without the stimulating effects of most sedative-hypnotics."

These tranquilizing drugs are not substitutes for the analgesics or anesthetics used in dental practice. The sedation is intended for use to reduce the anxiety of the nervous patient before he enters the dental office. The relaxed patient is in a more favorable condition for *any* form of dental procedure.

[1]Selling, Lowell S.: Clinical Study of a new Tranquilizing Drug, JAMA **157**:1292 (April 30) 1955.

[2]Borrus, Joseph C.: Study of Effect of Miltown on Psychiatric States, JAMA **157**:1596 (April 30) 1955.

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(*Continued from page* 221)

rent anxiety and excessive emotional tension. Chronic anorexia with weight loss is usually a result of fatigue due to stress and overactivity. Nausea, vomiting, and diarrhea may reflect repressed resentment; in such cases little or no anxiety is evident.

Abdominal pain is usually associated with a painful, spastic colon. Such pain is relieved by defecation. Coccygodynia is almost always a psychoneurotic symptom. Surgical measures, such as amputation of the coccyx are usually unsuccessful. Pain and stiffness of the shoulder is often seen in patients with psychoneurosis. Because of the persistence of symptoms, extensive roentgenographic or myelographic examinations and spinal puncture are often needlessly done.

A patient may present several symptoms at a time but one usually predominates. A shift to another symptom is not uncommon. One should seek stressful situations in the patient's everyday life that may account for both psychic and somatic dysfunction.

Anxiety states are often suggested by previous prolonged illness, multiple operations, or frequent obscure and slight illnesses. Patients with relatives who have died of cancer or heart disease may be able to duplicate the symptom pattern of either.

The following physical signs suggest tension and anxiety: (1) The patient may sigh frequently as a result of fatigue from emotional unrest. (2) Tinted glasses may be worn which (a) serve as a shield against the world, and (b) relieve the photophobia resulting from pupillary dilatation caused by anxiety-induced hyperadrenalism. (3) Excessive sweating in the axillae may arise from simple tenseness of an emotionally healthy person being examined. Observation of this sign, however, should alert the examiner to the possibility of psychoneurosis.

Understanding discussions and judicious use of sedatives usually restore the patient to full function.

Meyer, Ovid O.: Some Symptoms and Signs of Anxiety States, Northwest Med. **50**:1006-1008 (*October*) 1954.

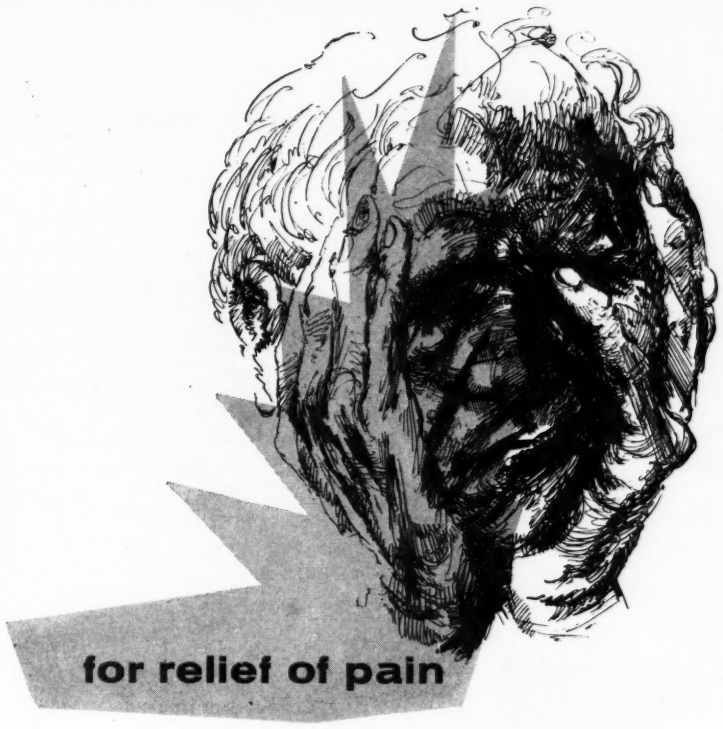
Penicillin Reactions

The administration of penicillin, especially by the intramuscular route, can bring about reactions of varying degrees. The over-all incidence of penicillin reactions has been estimated at from 2 to 20 per cent by various authors.

The incidence is highest in persons with a history of allergy such as (1) asthma, (2) hay fever, (3) atopic dermatitis, and (4) urticaria. Almost every type of drug reaction has been observed with penicillin. These reactions range in sensitivity from asymptomatic dermatographia and urticaria of transient type to the serum type of reactions, exfoliative dermatitis and anaphylactoid shock.

In general, the more severe the reaction, the less reversible it is. The reaction of periarteritis nodosa and allergic granulomatosis may proceed

(*Continued on page* 230)



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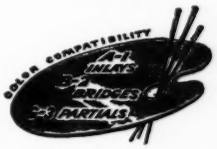

(*Continued from page* 226)

for a long time after the initiating allergen, penicillin, has been eliminated. Severe anaphylactoid reactions are noted more frequently than published evidence would indicate.

Often these patients require hospitalization. In many cases the effects of the penicillin reactions are more severe than the primary disease. Recently fatalities from anaphylactoid reactions to penicillin have been reported.

It has been found that the early use of corticotropin and cortisone is indicated in the treatment of penicillin reactions. Preventive measures include (1) avoidance of penicillin in allergic persons, if possible, (2) the increased oral use of penicillin, and (3) the combination of penicillin with injectable antihistamine for parenteral use.

Strauch, J. H.; Byrd, W. C.; and Eng, G. O.: Penicillin Reactions, Texas J. M. **50**:699-703 (*October*) 1954.

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Every science has its internal feuds. Every scientist has had his detractors. No one who proposes something new should expect that his views will be accepted without debate. Sometimes the boundaries of the debate are violated and the personalities of the debaters are made the subject at issue. When discussion is confined to the subject and does not run off into irrelevant or personal issues it is wholesome and should be encouraged. When men who are trained in the discipline of science refuse to enter the open forum of discussion and insist that only one point of view be allowed expression, then we are face to face with dogmatism or totalitarianism. This is not science.

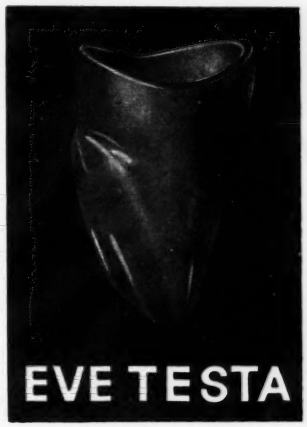
We may draw a parallel between a subject that has enkindled heat in our own field of dentistry, fluoridation, and a subject that has enlivened the psychologists, extrasensory perception.

Those scientists who believe in extrasensory perception (ESP or psi) feel that thought may be transferred from one person to another without physical intermediation. This transference of thought across time and space is a natural phenomenon of the living organism and like other skills and talents is not posessed in equal degree by every organism. Some persons for reasons unknown have the power of ESP highly developed: in others it is totally lacking. It is a form of mental energy that is transmitted from one mind to another without the medium of words, symbols, or any kind of sense-organ stimulation.

Since the first records of history there have been seers, prophets, clairvoyants, and mystics. In some cultures they have been held in awe and esteem. In other cultures they have been looked upon as frauds and mountebanks. The more materialistic the milieu, the less status is allowed the person with ESP. Materialism is built on objective values, on "facts," on sensory experiences. It has no time, no patience, for data that cannot be explained by the methods of science.

We are all inclined, in varying degrees, to play hunches, to react intuitively, to project our thoughts across space and through time. When we are doing these things we are practicing a kind of ESP. Some people are proud of their particular form of clairvoyance and boast of the power of their intuition and the accuracy of their hunches and snap judgments. Most of us have some reticence to mention our experiences of this kind for fear of being considered a bit strange or delusional. The higher one ascends in the social and scientific scale the less likely he is to have any truck with anything that may appear to be of the occult or supernatural.

It is this hesitancy among scientists to accept any data that are not objec-



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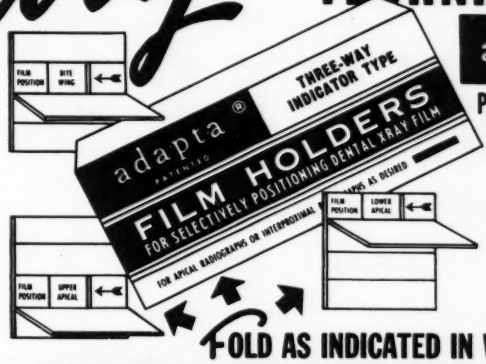

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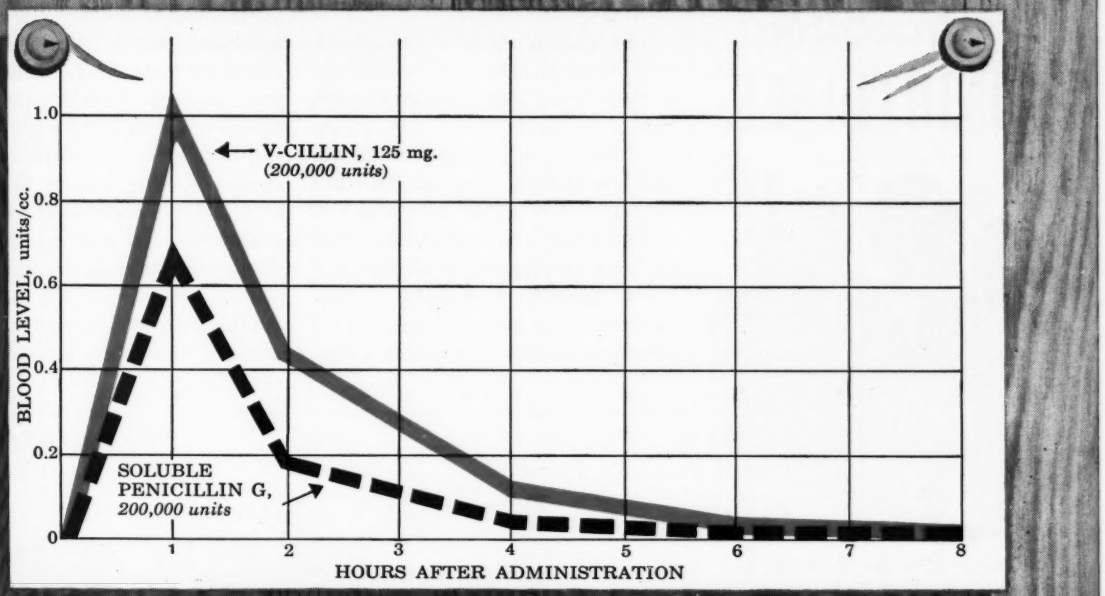
tive that has led to the intense furore among psychologists on ESP. *Science*, the important and official publication of the American Association for the Advancement of Science, published an article, "Science and the Supernatural," that was a spirited attack against ESP. Immediately the editor was flooded with letters in reply, and being a good editor, he published the views of other scientists who were staunchly in the camp of believers in ESP.

Out of these experiences of the psychologists and their lively views on ESP we learn that nothing is really finally settled in the world. What we believe so completely today as scientific "fact" may be disproved tomorrow. We cannot afford to be rigid about any view that we may hold. Flexibility in outlook is not vacillation. Our minds must forever be open to accept new evidence.

Those of us who are responsible for arranging the programs for dental meetings and for publishing periodicals have a particular duty to our colleagues. This duty requires that we make the effort to see that both sides on any issue have equal opportunity to express a point of view. It is dishonest to allow only the expression of the prevailing or popular view.

When we receive the impact of an opinion contrary to our own we react with natural annoyance. None of us is so saintly that he accepts in good grace ideas that endanger his own ego or security. However, if we do not listen we are deluding ourselves and may follow a false trail that leads to peril. We must open our ears and our minds to both sides of every issue in order to feel secure in the side that we embrace. To strengthen oneself is to know the vulnerability of our adversary. To be sure in our own opinion is to know the arguments of our opponent—and to have reasonable answers for them. To attach the blinders "I won't look" limits our field of vision. The one who is half blind is an easy victim to attack.

Out of the debate among the psychologists on ESP has come a suggestion that is as important to dentists as it is to any group that claims kin-



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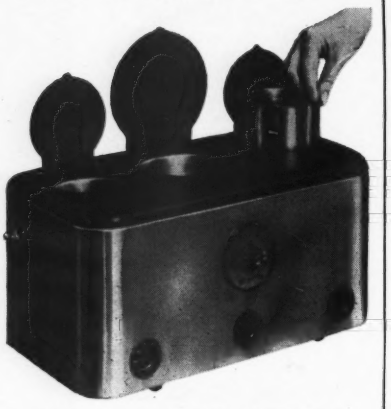

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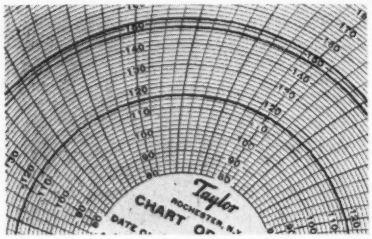

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ship to the methods and disciplines of science. The suggestion was made by the distinguished J. A. Rhine of Duke University. Here it is:

"American science, I am convinced, badly needs a forum—a journal that is open to any new work, however radical its implications, without the usual practice of waiting for a savage attack to make it admissible. It is, of course, what might be called the forum attitude that is lacking. Yet it will be freely recognized by all that fair and unhampered presentation of revolutionary ideas and discoveries is especially vital to the continued advancement of inquiry. The national interest itself obviously requires the active cultivation of unrestricted investigation. It seems likely that the well-known lag of American science (omitting technology) behind European contributions in the more fundamental researches of the last 50 years (for example, in psychology and physics) is due entirely to this one distinct difference, this greater inhospitality to novel and unconventional claims that prevails in the United States.

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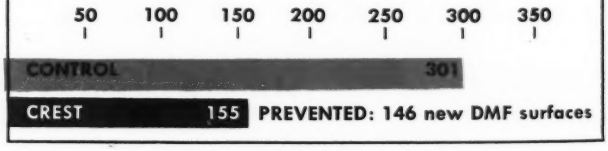

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already hangs over his head may easily depend on how well and how fast his scientists can think. But who knows what this thinking is worth until it is known—until it is made readily available in the forum, the symposium, and the periodical? It is time, and it is urgent, to borrow from the engineers their successful practice of reaching out for, instead of fending off, novel claims and unorthodox discoveries, of clarifying their status promptly and in general encouraging the creative turn of mind—and to extend this practice to areas beyond that of gadgetry and invention, areas that have to do with the understanding of man and the guiding values of life."

—E. J. R.

Hairy Tongue

Description

The entity known as hairy tongue was first described more than a century ago. It begins without subjective symptoms and is frequently discovered by accident. It is characterized by an area of dark discoloration—usually the color is black, but shades of brown, yellow, blue, and green have been described—covered with hair-like processes on the dorsal surface of the tongue. Histologically, the filiform papillae are hypertrophied and are the origin of hair-like filaments, which may grow as long as one-half inch. The papillae become densely matted and may be covered by accumulations of bacteria and molds. The filamentous proliferation has been compared to the hair of a dog dampened by water. In most instances the condition is asymptomatic, patients complaining only of the appearance of the tongue; in other instances, patients have been annoyed by tickling sensations or gagging produced by the elongated papillae.

Possible Causes

Considerable controversy exists with respect to the cause of hairy tongue. Some investigators ascribe the condition to infection of the filiform papillae of the tongue with pigment-producing fungi, yeast, or bacteria; others expressed the opinion that the

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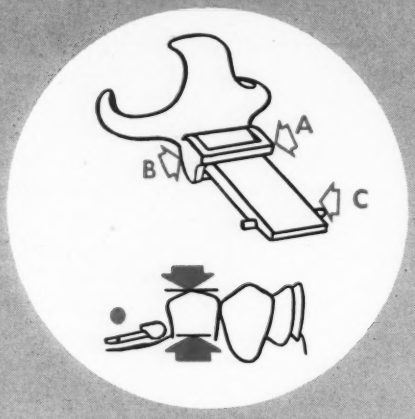

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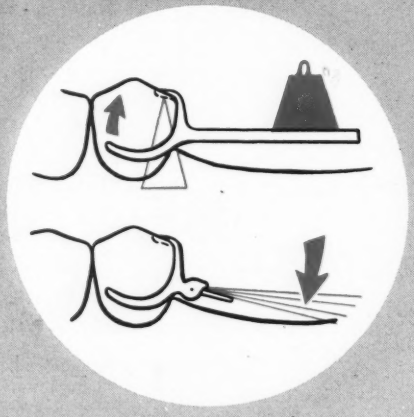

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various organisms found in the growth represent an accidental rather than a causal relationship. During the past few years it has been found that hairy tongue can be caused by the oral use of sulfonamides and antibiotics. A number of reports have been published incriminating lozenges, troches, and inhalants containing sulfonamides, penicillin, chlortetracycline (Aureomycin), chloramphenicol, and oxytetracycline (Terramycin).

Although no specific treatment is extant for hairy tongue, the lesion is benign. Therapy is aimed at clearing away the new growth. Fortunately, the connection between hairy tongue and the use of an offending drug is often established by the history. Consequently, since hairy tongue under these circumstances can in effect be considered a man-made disease, withdrawal of the offending medication will eliminate the lesion.

Adapted from Editorials and Comments, *Journal of the American Medical Association* **156**:1175 (Nov. 20) 1954.

Premalignent Lesions of Lips in Soldiers

PETER F. LABAND, D.D.S., and WILLIAM D. BUMSTEAD, D.D.S., San Francisco

Summary

The lips of 2,166 soldiers were examined before they were discharged from the Army; 996 were returning from Korea, 1,170 from other assignments in military service.

In ten men, lip lesions of hyperkeratotic type were found. All these

(*Continued on page* 240)

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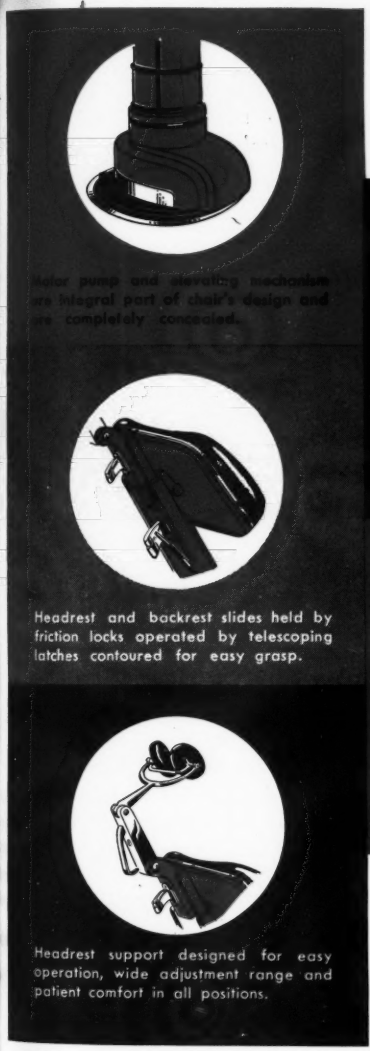
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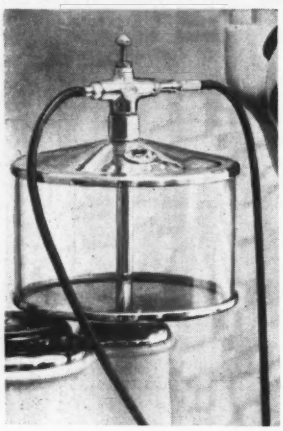

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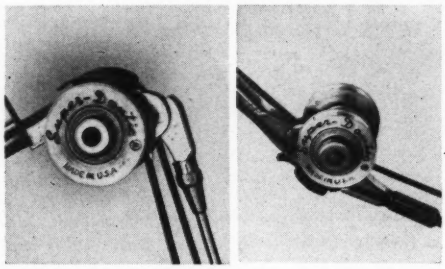

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(Continued from page 237)

men had fair complexions and blond to red hair; all ten men were returnees from Korea and had worked outdoors. Five of the lesions showed focal keratosis.

Civilian physicians and dentists should be made aware of the possibility of malignant and premalignant lesions in lips of young men, 20 to 30 years of age, especially with fair complexion and blond to red hair.

From *Oral Surgery, Oral Medicine and Oral Pathology*. **8**:75 (Jan.) 1955.

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